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Welcome to the 2018-2019 academic catalog for the Johns Hopkins University full-time undergraduate and graduate programs in the Zanvyl Krieger School of Arts and Sciences and the G.W.C. Whiting School of Engineering. This catalog contains information about academic and student life programs and policies. It also includes links to external websites; these are provided as a convenience to the reader and the content contained therein is not part of the catalog.

The University reserves the right to change without notice any programs, policies, requirements, or regulations published in this catalog. The catalog is not to be regarded as a contract.

About the Catalog

The Johns Hopkins University is accredited by The Middle States Association of Colleges and Schools, Middle States Commission on Higher Education, 3624 Market Street, Philadelphia, PA 19104-2680.

The following Bachelor of Science programs in the Whiting School of Engineering are accredited by the Engineering Accreditation Commission of ABET: Biomedical Engineering, Chemical and Biomolecular Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Mechanics, Environmental Engineering, Materials Science and Engineering, and Mechanical Engineering.

The Bachelor of Science program in Computer Science is accredited by the Computing Accreditation Commission of ABET.

For current faculty and contact information go to http://krieger.jhu.edu/publichealth/directory/
# DEGREE PROGRAMS

## Degree Programs in Arts and Sciences and Engineering

See program descriptions for the specific degrees offered.

### Arts and Sciences

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<th>Program Major</th>
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### Engineering

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Notes on the Degrees

1. Candidates for the master’s as a terminal degree are accepted, but financial aid generally is not available.
2. Candidates for the master’s as a terminal degree may be accepted in special cases, but financial aid generally is not available.
3. Candidates are admitted to the Ph.D. program only, but the M.A. is awarded to students who (a) complete one year of courses, pass an examination in one foreign language, and submit an acceptable master’s essay to a member of the faculty or (b) complete two years of courses and pass an examination in two foreign languages.
4. Candidates for the master’s as a terminal degree are not accepted. However, a student is awarded a master’s degree en route to the Ph.D. after the successful completion of the Graduate Board oral examination.
5. A master of science in engineering or a master of materials science and engineering are offered.
6. See department listing.
7. M.S. available only to Arts and Sciences baccalaureate students.
8. M.A. only.
9. B.A. only.
10. B.A. or B.S. available.
11. Candidates are admitted to the Ph.D. program only, but the M.A. is awarded to students who complete requirements set by the director of graduate studies.
12. Applicants must currently be JHU undergraduate.
13. Within the Department of Biomedical Engineering.
14. Within the Department of Applied Mathematics and Statistics.
15. Within the School of Medicine.
16. Master’s degree awarded by the School of Advanced International Studies.
17. Master’s degree awarded by the School of Public Health.
18. Qualified Undergraduates from any AS or EN program are eligible to apply.
19. Area of Concentration

Minors


JHU Academic Programs

In addition to the full-time offerings of the Krieger School of Arts and Sciences and the Whiting School of Engineering, Johns Hopkins offers additional undergraduate, graduate, and professional programs through other academic divisions.

For more information about these opportunities please visit https://jhu.edu/academics/.
UNDERGRADUATE STUDENTS

The policies, procedures, resources, and opportunities included in this section are relevant for undergraduates enrolled in the full-time degree programs in the Zanvyl Krieger School of Arts and Sciences and the Whiting School of Engineering on the Homewood campus. Please use the links at the left to navigate to your topic of interest.

Admissions and Finances

Every year the Office of Undergraduate Admissions enrolls a freshman class of approximately 1,300 men and women from all over the United States and many countries. In addition to first-year students, transfer students are also welcomed each fall to the Homewood campus from other colleges and universities.

The admissions committee looks for students who will thrive as Johns Hopkins undergraduates. As part of a holistic review process, intellectual interests, academic performance and character, and personal contributions are important components of the application evaluation. A student’s intellectual curiosity, seriousness of purpose, and range of extracurricular activities and leadership are considered as well as scholastic record, aptitude test results, essays, and recommendations.

More information about the undergraduate admissions process can be found at apply.jhu.edu.

Financial Services

Johns Hopkins is dedicated to enrolling the strongest students each year, and it’s our goal to enable students to make their college decision without being limited by their family financial circumstances. The Office of Undergraduate Admissions and the Office of Student Financial Services are dedicated to meeting 100% of calculated financial need for all admitted students.

Financial aid advisers in the Office of Student Financial Services are always available to guide you through the process. Reach them at 410-516-8028 or fin_aid@jhu.edu for more information.

Visit the Office of Student Accounts website (https://studentaffairs.jhu.edu/student-accounts/tuition-fees) for the fall and spring semester tuition refund policy and deadlines.

The tuition refund policy and deadlines for summer courses are posted on the Summer Programs website (https://summerprograms.jhu.edu).

Veterans Educational Benefits

Johns Hopkins is approved by the Maryland Higher Education Commission for the training of veterans, service members, eligible spouses and dependents under the provisions of the various federal laws pertaining to veterans’ educational benefits. Information about veterans’ benefits and enrollment procedures may be obtained at https://studentaffairs.jhu.edu/registrar/veterans/ or veterans@jhu.edu the Office of the Registrar, 75 Garland Hall, 410-516-6635.

Initial Enrollment

Once admitted to the university, the student must complete an Application for Program of Education or Training (VA Form 22-1990) from the Department of Veteran Affairs (https://benefits.va.gov/gibill). A copy of the Certificate of Eligibility, along with a copy of the DD-214, is sent to the Veterans Desk, Office of the Registrar, 75 Garland Hall, Johns Hopkins University, Baltimore, Maryland 21218. Additional delivery options can be found at https://studentaffairs.jhu.edu/registrar/veterans/.

The student who is transferring from another university or college will need to obtain a Request for Change of Place of Training (VA Form 22-1995) from the Department of Veteran Affairs (https://benefits.va.gov/gibill). The completed form should be submitted to the VA, and a copy sent to the Veterans Desk at the university.

Re-enrollment

Students who received veterans’ benefits at the university the preceding semester and plan to enroll with no change of objective should inform the Veterans Desk, veterans@jhu.edu at the time of registration that they want to be recertified under the provisions of their eligibility.

Students receiving veterans’ benefits must take courses that lead toward the exact objective (usually a specific degree) on the original VA application. Otherwise, they must submit a Request for Change of Program (VA Form 22-1995). Students utilizing veterans’ benefits must let the Veteran School Certifying Official know immediately of any change in their program or status that might affect the amount of their VA payment. If they fail to do so, the Department of Veterans Affairs will seek reimbursement from the student for any overpayment.

Standards of Progress

Continuation of VA payments depends on the student’s meeting the university’s academic standards for all students. The student must also meet any standards of progress which may be established by VA regulations.

Military TA

For guidance with utilizing Military tuition assistance please contact veterans@jhu.edu.

The College Navigator Tool

Veteran students may go to the College Navigator (http://nces.ed.gov/collegenavigator) to access a school comparison tool.

Academic Policies

The Krieger School of Arts and Sciences and the Whiting School of Engineering offer myriad opportunities for intellectual exploration, academic challenge, and personal growth. To satisfy your academic goals and assure your progress toward graduation, take action and responsibility for the following:

• Seek advice from multiple faculty and other university professionals.
• Meet with your assigned advisor at least once a semester.
• Learn the information contained within this online catalog. Failure to do so does not excuse you from responsibility for the rules and procedures.
• Track your completion of your degree requirements.
• Consult your advising office and your major department about any questions concerning academic policy.

All students are expected to observe the academic policies and practices of the university; personal difficulties, illness, and/or advice contradicting the rules and procedures does not constitute automatic grounds for exemption from these rules or procedures. Written requests for
requirements must be submitted to the student's academic advising office. After review, a student will be notified whether the exception is approved. The University reserves the right to change rules, procedures and other information within this website as appropriate. This website is not to be regarded as a contract. If you have questions, contact your school's advising office.

Requirements for a Bachelor's Degree

The information below describes the requirements for students entering JHU in Fall 2014 or later. Students who entered JHU prior to Fall 2014 should view the appropriate archived catalog (p. 1010).

There are five categories of degree requirements that comprise an undergraduate degree at Hopkins:

1. Total degree credit requirement
2. Residency requirement
3. Distribution requirements
4. Writing requirement
5. Departmental major requirements (and minor requirements, if applicable)

All approved credit earned through exams or at other colleges and universities may be used to meet requirement areas 3-5 listed above: distribution requirements, the writing requirement (according to the procedures defined by the Writing Center (http://krieger.jhu.edu/ewp/writing-requirement), http://krieger.jhu.edu/ewp/writing-requirement)) departmental major and minor requirements, and to satisfy course prerequisites.

The total degree credit requirement (requirement 1) is considered a distinct degree requirement, and ranges from 120-129 credits depending on the degree. It is not merely a cumulative tally of courses used to satisfy requirement areas 3-5 listed above. Because students who entered the university directly from high school must complete 100 JHU credits (requirement 2), there is an effective limit on how many exam and transfer credits can be counted towards the total degree credit requirement (requirement 1).

For a degree requiring 120 total credits, a maximum of 20 approved credits from other sources may be counted towards the total degree credit requirement (requirement 1), even if more than 20 credits from external sources have been used to satisfy requirement areas 3-5 listed above.

For example, a student is pursuing a degree whose total degree credit requirement is 120. This student could have a total of 32 external credits posted to the transcript: 8 transfer credits from another university and 24 AP exam credits. All 32 of these credits may be applied to requirement areas 3-5. However, in order to allow room for the residency requirement (requirement 2), only 20 of those 32 credits will be tallied towards the 120 total degree credit requirement (120-100=20). If this student changes to a degree program whose total degree credit requirement is 126, 26 of those 32 credits would be tallied towards the total degree credit requirement (126-100=26).

All approved exam credits earned will be posted to the transcript. Up to 12 approved transfer credits will be posted to the transcript. See External Credits (p. 21) section for details.

"D" Grade Restriction

University policy allows no more than 18 credits from courses with grades of D or D+ to be counted toward the credits required for graduation. Departments may set a lower limit on the number of permissible D or D+ grades for a specific major. Many departments do not accept any D or D+ credits for major requirements.

Ten-Year Degree Completion Limit

A student must fulfill all degree requirements for graduation within 10 academic calendar years from the date of matriculation at the university.

Degree Credit Totals

The Bachelor of Arts degree requires 120 credits. The Bachelor of Science degree, whether in Arts and Sciences or Engineering, requires from 120 to 130 credits, depending on the major. No program may require more than 130 credits.

Residency Requirement for Freshmen

Students who enter the university from high school must complete at least 100 credits at JHU. This includes courses that are taken after matriculation as a degree-seeking student:

- in fall, intersession, spring, or summer at JHU
- in other divisions of the university (including Advanced Academic Programs and Engineering for Professionals)
- through the Baltimore Student Exchange Program institutions during the fall and spring semesters only
- through an approved study abroad program (up to 30 credits)

In addition, credits earned through JHU courses prior to matriculation as a degree-seeking student are applied to the 100-credit residency requirement.

Students who entered JHU prior to Fall 2014 should view the appropriate archived catalog (p. 1010).

All students must complete a minimum of four semesters in residence as a full-time student. Students must be in residence for at least two of the final four semesters, including the final semester prior to graduation.

Residency Requirement for Transfer Students

Students who enter the university as transfer students must complete at least 60 credits at JHU. This includes courses that are taken after matriculation as a degree-seeking student:

- in fall, intersession, spring, or summer at JHU
- in other divisions of the university (including Advanced Academic Programs and Engineering for Professionals)
- through the Baltimore Student Exchange Program institutions during the fall and spring semesters only
- through summer and intersession study abroad programs sponsored by Hopkins departments

In addition, all transfer students must complete at least four full-time semesters in residence at JHU. Study abroad programs offered during fall and spring semesters do not count towards this four-semester
Residency Requirement for Peabody Double Degree Students

Students earning a double-degree at Peabody must complete at least 48 credits on the Homewood campus in either the Krieger School of Arts & Sciences or the Whiting School of Engineering.

Writing Designation Requirements

To encourage excellence in writing, across disciplines, the university requires all undergraduates to take a number of writing-intensive courses. A writing-intensive (W) course is one in which students write at least 20 pages of finished writing, distributed over multiple assignments, usually 3 or 4 papers, throughout the semester. Instructors respond to students’ work in written comments or in conference, or both; and students have at least one opportunity to receive their instructor’s feedback on a draft and then revise. A writing-intensive course guides students’ practice in writing and makes writing an integral part of the course. The writing-intensive requirement is administered by Patricia Kain, Director of the Expository Writing Program (http://krieger.jhu.edu/ewp).

Writing-intensive courses are indicated by a “W” in the JHU course schedule and an asterisk (*) on a student’s unofficial transcript. Courses taken to satisfy the writing requirement must be taken for a letter grade and passed with a grade of C- or better. Writing-intensive courses taken to satisfy major, minor, or distribution requirements may also count toward the writing requirement.

All students earning a degree from the School of Arts and Sciences must complete at least 12 credits in writing-intensive courses. Candidates for a B.A. degree in the School of Engineering must complete 12 credits (four courses at least 3 credits each) in writing-intensive courses, while candidates for a B.S. degree in Engineering must complete 6 credits (two courses at least 3 credits each) in writing-intensive courses. Please note, this requirement is based upon a student’s major; students are not required to complete a separate writing requirement for any additional majors.

For information about transferring writing intensive credits to JHU, please see the External Credits (p. 23) section of Academic Policies.

Academic Area Designation Requirements

The distribution requirement stipulates that students must earn a minimum number of credits in academic areas outside of their primary major. Area designators represent an association between the course and an academic area. Courses with area designators are expected to employ basic techniques, they are to advance knowledge and increase a student’s understanding of the theory. Courses that are teaching a basic skill, and therefore do not expose the student to modes of analysis and scholarship that represent the essence of a given discipline, will not be assigned an area designator. If taught within a Homewood academic department, the department is responsible for assigning area designators to their courses. Courses not offered through Homewood academic departments will be reviewed by the appropriate dean's office to review proposed designators.

The academic areas in the Hopkins curriculum are humanities (H), natural sciences (N), social and behavioral sciences (S), quantitative and mathematical sciences (Q), and engineering (E).

The area designations of courses (H, S, N, Q, and E) are included in the course information in the departmental pages (p. 53) of the catalog and in the online schedule of classes. The area designation also appears beside the course title on a student's academic record. When a course has more than one area designation (HS, EN, EQ, etc.), students may use only one of the designations to satisfy the distribution requirement.

Only courses or other credit-bearing opportunities with area designations may be used to satisfy the distribution requirement. Area designators are not assigned to the following:

- Independent study
- Research
- Internships
- Music performance (unless taken as part of a music minor, in which case the course will be designated H)
- Dance performance
- Foreign language elements courses (see additional foreign language rules (p. 14))
- Medical tutorials

Area designations can be assigned to courses taken elsewhere, to courses taken in other divisions of the university, or to graduate courses taken by undergraduates. These assignments are made by the appropriate dean’s office based on the course content and the recommendations of the faculty. The most useful criteria for determining an appropriate area designator will be the course description and a similar JHU departmental offering.

The following courses at the Peabody Conservatory have H designations:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>H 530.411</td>
<td>Keyboard Literature I</td>
</tr>
<tr>
<td>H 530.412</td>
<td>Keyboard Literature II</td>
</tr>
<tr>
<td>H 530.413</td>
<td>Keyboard Literature III</td>
</tr>
<tr>
<td>H 530.414</td>
<td>Keyboard Literature IV</td>
</tr>
<tr>
<td>H 530.569</td>
<td>Jazz Analysis/History</td>
</tr>
<tr>
<td>H 530.570</td>
<td>Constructive Listening &amp; Analysis/ Jazz History</td>
</tr>
<tr>
<td>H 610.311</td>
<td>History of Music</td>
</tr>
<tr>
<td>H 610.312</td>
<td>History of Music II</td>
</tr>
<tr>
<td>H 610.313</td>
<td>History of Music III</td>
</tr>
<tr>
<td>H 610.314</td>
<td>History of Music IV</td>
</tr>
<tr>
<td>H 610.555</td>
<td>Music and Culture</td>
</tr>
<tr>
<td>H 260.215</td>
<td>Humanities Seminar I</td>
</tr>
<tr>
<td>H 260.216</td>
<td>Humanities Seminar II</td>
</tr>
<tr>
<td>H 260.249</td>
<td>Film History: Sounds and Scores</td>
</tr>
<tr>
<td>H 260.327</td>
<td>Literary Trials</td>
</tr>
</tbody>
</table>

Distribution Requirement for Arts & Sciences Students

Students must earn:

- At least 9 credits in humanities
- At least 9 credits in social sciences
- At least 9 credits in natural sciences, quantitative, or engineering

These credits fulfilling the distribution requirement may overlap with major or minor requirements and the writing requirement.

In Arts and Sciences, courses taken for the distribution requirement may be taken for a letter grade or for Satisfactory/Unsatisfactory credit. Courses passed with a letter grade of D or better, or passed with a
Satisfactory grade, will fulfill the distribution requirement. For any student whose first-semester grades are covered under the current first-semester grading policy, an earned D will satisfy the distribution requirement even though the grade will appear as Unsatisfactory (UCR) on the official record. Satisfactory grades (representing a C- or higher letter grade) earned in a student’s first semester at JHU will satisfy the distribution requirement if they have the correct area designations.

Students who entered JHU prior to Fall 2014 should view the appropriate archived catalog (http://e-catalog.jhu.edu/archive).

**Distribution Requirement for Engineering Students**

Students earning a degree in the School of Engineering must complete the following distribution requirement:

- 18 credits (6 courses at least 3 credits each, except for the two specific course sequences listed below) designated H and/or S. Although language elements courses do not carry an area designator, engineering students may use these courses as substitutes for humanities courses in meeting the distribution requirement.
- The following specific course pairings of a 2-credit course and a 1-credit course have been approved to count towards the H/S distribution requirements in place of a single 3-credit course:
  1. **Set One:** EN.660.400 Practical Ethics for Future Leaders (2 cr.) with EN.660.406 Practical Ethics for Future Leaders - Special Topics (1 cr.)
  2. **Set Two:** EN.660.400 Practical Ethics for Future Leaders (2 cr.) with EN.520.404 Engineering Solutions in A Global, Economic, Environmental, and Societal Context (1 cr.)

In Engineering, each department determines whether or not the Satisfactory/Unsatisfactory grading option will be permitted for courses used to satisfy the distribution requirement.

**Completing a Major and Minimum Grade Point Average**

Every student who earns a bachelor’s degree must satisfy the requirements of a major. A major is a structured curriculum, usually within the confines of a particular academic field. Generally the requirements for a major provide a student with a broad overview of the field through introductory courses, followed by more specialized courses tailored to meet the student’s interests in the field. The requirements for the major may also include courses in other disciplines that provide skills and information of importance to professionals in the major field. Courses required for the major must be taken for a letter grade and students must have a grade point average of at least 2.00 in the courses required for the major, i.e., not including elective courses or courses used only for the distribution requirement. Many majors require a grade of C- or better in required courses.

**Departmental Directors of Undergraduate Studies**

For every major and minor that is offered at Johns Hopkins, there is a faculty member, or their designee, who serves as the program’s Director of Undergraduate Studies (DUS). They are available to answer questions about their major(s) and/or minor(s). The directors also assign faculty advisors to students who declare a major or minor.


**Declaring a Major in Arts and Sciences**

Students who enter the Krieger School of Arts and Sciences from high school are classified as pre-majors during their freshman year. In April, freshmen in Arts and Sciences will meet with an academic advisor to declare their primary major in Arts and Sciences. To declare a major at a later time, see Changing Majors or Advisors section below. Students must declare a major by April 15th of their sophomore year in order to assure that they will complete requirements for graduation in four years.

**Declaring a Major in Engineering**

Students who enter the Whiting School of Engineering declare a specific engineering major on their application for admission. A student must take direct action to change the major. To change a major, see Changing Majors or Advisors section below.

Students who select the Biomedical Engineering major must be accepted into the program at the time of application for admission. The student’s offer of admission to the university will indicate either:

- acceptance into the BME program
- acceptance into any Engineering or Arts & Sciences major except BME

On a space available basis, BME may accept a limited number of students into the program at the end of the freshman year based on the overall academic credentials of each applicant. However, this option is exercised very infrequently by the BME department.

Students may also select the more general “undecided engineering” category on the admissions application to enter the Whiting School of Engineering. It is recommended that undecided engineering students select a specific major no later than the end of freshman year.

**Special Note for Freshmen**

Arts and Sciences freshmen may declare second majors and minors offered through the School of Engineering beginning their freshman year until April 15th of their junior year. Engineering students may declare a second major or minor offered through either the School of Engineering or the School of Arts and Sciences beginning their freshman year until April 15th of their junior year.

**Changing Majors or Advisors**

Once students have declared a major, they may change their major or their faculty advisor by obtaining a Change of Major form from the Office of the Registrar or the advising offices, meeting with the appropriate person in the major to be assigned a new faculty advisor, and submitting the form to the Office of the Registrar.

Note that students may declare the BME major only at the time of application for admission to the University or as one of a limited number of students accepted into the program at the end of the freshman year based on the overall academic credentials of each applicant and on space available.

**Double Majors**

Students who wish to complete the requirements of more than one major are expected to declare the additional major(s) by April 15th of their junior year. Students may add or drop an additional major by completing the appropriate form, available from the Office of the Registrar or from the student’s academic advising office. The form must be signed by the director of undergraduate studies for the major before it is submitted to
the Office of the Registrar. The DUS will also assign a faculty advisor to the student.

A student with a double major receives the degree (B.A./B.S.) associated with the student’s primary major. Completing a second major does not entitle the student to a second degree. The completion of additional majors is recorded on the transcript and diploma. When completing a double major, students need only satisfy the distribution requirement affiliated with the school of their primary major.

**Declaring a Minor (optional)**

Students who wish to complete the requirements for a minor(s) are expected to declare the minor(s) by April 15th of their junior year. Students may add or drop a minor by completing the appropriate form, available from the Office of the Registrar or from the student’s academic advising office. The form must be signed by the director of undergraduate studies for the minor before it is submitted to the Office of the Registrar. The DUS will also assign a faculty advisor to the student. The completion of a minor is recorded on the transcript, but the minor does not appear on the diploma.

Official recognition with notation on the academic record is not given for completion of majors or minors at other divisions of the university or at other colleges.

**Restrictions Applying to Double Majors and Minors**

Within the Hopkins curriculum, requirements for the completion of undergraduate majors and minors are established by academic departments and approved by the Homewood Academic Council, acting on recommendations from the Curriculum Committees of the Krieger and Whiting Schools. Students who fulfill the necessary prerequisites, and satisfy the specified course requirements for a major/minor will be certified as having completed that major/minor. While departments are free to designate the range of courses that may satisfy major/minor requirements for their own academic programs, they may not prohibit the use of course work presented for their department’s major/minor from being used to satisfy the requirements of other majors or minors. In other words, students may ”double count” coursework that independently meets the requirements of more than one major/minor.

Students are encouraged to choose additional areas of study to complement their major. However, students may not choose a minor with an identical name to their major. For example, a student majoring in Africana Studies may not declare a minor in Africana Studies.

**Other prohibited combinations include:**

1. Students may not major in Molecular and Cellular Biology and Biology.
2. Students majoring in the Natural Sciences Area may only double major or minor in a program outside of the natural sciences
3. Students majoring in Medicine, Science and the Humanities may not double major in Natural Sciences Area.
4. Students majoring in Romance Languages may not major or minor in one of the individual Romance Languages (except for the Spanish for the Professions minor).
5. Students majoring in French may not complete either French minor option.

**Closely-related majors and minors that are allowed include:**

1. Economics majors may complete a Financial Economics minor.
Leaves of Absence

Leaves of absence are granted for specific periods, generally up to one year, and such leaves are regarded as approved interruptions of a student’s program. No tuition or fees are charged while on leave. If applicable, students should consult with the Office of Financial Aid prior to requesting a leave of absence. Students may not be eligible for health benefits if enrolled through JHU’s Student Health Benefits.

For more information, visit https://studentaffairs.jhu.edu/registrar/students/student-health-benefits/ and/or https://faid.jhu.edu/.

Personal Leave of Absence

Students may be granted a term leave of absence for personal reasons with the approval of the academic advising office for the student’s school and with a letter from the student’s parent or guardian acknowledging the request for leave. Written requests for a leave of absence should be submitted to the academic advising office in the student’s school. During a leave of absence, students may not enroll in another institution for the purpose of transferring credits back to JHU.

Students who fail to return to the university when expected will be considered to have withdrawn from the university.

Medical Leave of Absence (Physical or Mental Health)

Students may be granted a term leave of absence for physical or mental health reasons with the approval of the Office of the Dean of Student Life. Medical leaves of absence require consultation with the Counseling Center. Physical health leaves of absence require consultation with the Student Health and Wellness Center. No tuition or fees are charged while on leave. Further details are available from the Office of the Dean of Student Life (http://studentaffairs.jhu.edu/student-life/support-and-assistance/medical-leave-absence).

Note for Peabody Double Degree Students

Peabody double degree students may request a leave of absence from the double degree program, however they cannot be granted a leave of absence from only one portion (Homewood or Peabody) of the program.

Withdrawal from the University

A student who wishes to withdraw from the university with no intent to return should consult with the respective academic advising office in order to submit an official notification. An official notification of withdrawal consists of the following items:

• a letter providing brief reason for withdrawal and effective date
• a letter from parent(s)/guardian(s) acknowledging the student’s withdrawal from JHU

The academic advising office will inform the Office of the Registrar, who will subsequently circulate the notification to other relevant campus offices, such as Student Accounts, Housing, Office of International Services, etc.

An enrolled student who leaves the university without notice, or who fails to register by the end of the second week of the semester, may be considered to have withdrawn from the university.

A student who transfers to another institution is automatically considered to have withdrawn from JHU.

In the rare situation where a withdrawn student wishes to return to the university, the student must submit a written request for readmission to their respective advising office for evaluation. Neither readmission nor transfer of credits is guaranteed. A student must be formally readmitted before registering for courses. Readmitted students do not pay another matriculation fee.

A student who wishes to withdraw from the university on a temporary basis and intends to return in a future semester should see the information under Leave of Absence (p. 10).

Peabody Double Degree Students

Information about withdrawing from one or both of a student’s degree programs is available on the Peabody Double Degree page. (p. 972)

Combined Bachelors/Masters Programs

Many departments, institutes, and centers offer undergraduates the opportunity to complete some of the requirements for a master’s degree while still completing the requirements for a bachelor’s degree. These programs offer early admission to a graduate program, and may enable a student to complete both bachelor’s and master’s degrees in four years. Other programs are considered five-year programs. Visit http://e-catalog.jhu.edu/degree-programs/ for information on offerings available in specific departments.

Students in the School of Arts and Sciences or the School of Engineering must be accepted into a combined program no later than the first semester of their senior year, however departments may set an earlier application deadline. Students in a combined program are considered to be full-time students, and are charged full tuition.

Students in a combined program are considered to be graduate students (1) upon completion of undergraduate degree requirements, or (2) upon completion of eight full-time semesters as an undergraduate student. Clearance from a student’s respective department is also required.

Additional information about combined programs is available at https://engineering.jhu.edu/academics/combined-bachelors-masters/ and http://homewoodgrad.jhu.edu/academics/combinedconcurrent-bachelors-masters-policies/.

Taking a Course as an Alumnus

JHU alumni who completed their bachelors degree through the Krieger School of Arts and Sciences or the Whiting School of Engineering may take additional courses in those divisions with permission of the advising office of the school from which they graduated. Students should complete a paper registration form and have it signed in their respective advising office before taking it to the Office of the Registrar for processing. Courses, grades, and credits will appear on a new academic record. Students must follow the rules for earning a second major or a minor after graduating, if applicable.

Finishing a Second Major or a Minor after Graduating

Students who have completed eight or more semesters in college may take an additional course or two after graduation to complete a second major or minor if they have filed an approved plan with their respective advising office before their initial graduation date. The courses, grades, and credits will appear on a new academic record. A notation indicating the additional major or minor will be added to the new academic record, but a new diploma will not be issued. Students must notify their academic advising office when additional courses taken after graduation satisfy another major or minor.

A plan consists of the following:
1. Written approval from the director of undergraduate studies for the additional major/minor.

2. Description of the remaining requirement(s) to be completed. No more than two courses may be needed and these courses must be completed within one year of a student's initial graduation date.

3. Brief summary of why it is necessary for the student to have their degree conferred before completion of all planned majors or minors.

4. Final approval of a plan must be obtained from the student's respective advising office.

Students who graduate in fewer than eight semesters may also take courses after graduation as a full-time or part-time student if not completing an additional major or minor. Students who graduate early lose the opportunity to complete additional majors or minors after graduation.

Students should seek assistance of their respective advising office in order to register for a course after graduation.

Second Degrees
Krieger School of Arts and Sciences and Whiting School of Engineering undergraduate-degree alumni who wish to earn a second bachelor's degree at Hopkins must contact their advising office. Students who receive approval must have already completed the requirements for the first bachelor's degree and complete an additional 60 credits at Hopkins beyond what they have done for the first degree. Alumni must request permission to pursue a second bachelor's degree within ten years of the conferral of the first bachelor's degree. The second bachelor's degree must be completed within ten years from the starting date of the second bachelor's degree.

Registration Policies

Advising and Registration Periods
All students are required to meet with an advisor for each declared major prior to registering for the fall and spring semesters. Advisor alert(s) for each declared major are placed on all students' records in SIS well in advance of the registration period; the alert(s) must be released by the advisor(s) to permit the student to register.

In the School of Arts and Sciences, freshman, first-semester transfer students, and undeclared students meet with their academic advisor beginning six weeks in advance of the registration period. Students with declared majors should contact their faculty advisor to schedule a meeting prior to their registration date.

In the School of Engineering, students meet with their faculty advisors during Engineering Advising Week (early November for spring registration and early April for fall registration).

Undergraduates register for spring semester in November, for Intersession in December, for summer in March, and for fall semester in April. Detailed instructions about registration will be emailed to all students before the registration period each term. If the student has not received this information at least two weeks before the start of classes for a fall or spring term, perhaps because of a change of email address or status in the university, the Office of the Registrar should be contacted immediately.

Schedule Verification
Students are responsible for verifying their schedules in SIS. Students are encouraged to retain a copy of their schedule for their records. In addition, students are advised to check their schedules after performing online registration changes (adding and/or dropping courses) to ensure accuracy. It is also recommended that students review their schedule prior to the add, drop, and withdrawal deadlines. Changes to a student's schedule will not be approved after these deadlines have passed. Failure to review and retain a copy of their registration confirmation will not be considered grounds for approving exceptions to these deadlines.

Intersession and Summer Special Registration Information
Summer and intersession opportunities, such as JHU-sponsored study abroad courses and career exploration courses, may have special registration deadlines, fees, and procedures. Please see the Intersession (http://pages.jhu.edu/intersession) or Summer (http://pages.jhu.edu/summer) Programs websites for additional information.

Intersession is a three-week period in January for students and faculty to participate in a variety of courses and activities that are offered for credit, and for non-credit. These offerings are designed to enrich the intellectual and social life of the campus. Registration in Intersession is optional.

For intersession academic exploration courses, the tuition cost of Homewood KSAS and WSE courses is free to undergraduates who were enrolled full-time in the previous fall semester (including approved study abroad); part-time students must pay tuition. All students must pay relevant fees. Students who are returning from a leave of absence may register for intersession if they pay tuition per credit hour. Students who register for Hopkins intersession courses outside of KSAS/WSE are subject to tuition charges determined by the individual school.

Summer courses at JHU are primarily offered during two five-week terms. Some courses run on alternative schedules and may, therefore, have different deadlines. Courses are sponsored by the same academic departments that oversee the university’s full-time degree programs. They are designed to reproduce, as closely as possible, similar courses offered during the spring and fall semesters. Tuition charges, and deadline dates, are published on the Summer Programs (http://pages.jhu.edu/summer) website.

Late Registration Fees
Registration in the School of Arts and Sciences and the School of Engineering is not permitted after the end of the second week of the semester, except in extraordinary circumstances as approved by the Assistant Dean for Academic Advising for their respective school. Students must register on time, even when they lack sufficient funds. The university provides many financing alternatives that permit students to register in most financial situations. Visit https://finaid.jhu.edu/ for information on the variety of financial support programs offered at JHU.

Students who for any reason do not complete their registration until after the prescribed registration period will be required to pay a late registration fee according to the following schedule:

- $100 - end of prescribed registration period until the day before the first day of classes of the upcoming semester
- $150 - first day of classes through the end of the first week of classes
- $200 - second week of classes
• $300 - after the second week of classes (special permission only)

For late registration fees in the summer, please see the Summer Programs (http://pages.jh.edu/summer) website.

Adding a Course

During the fall and spring semesters, students may add a course until the end of the second week of classes and pay no fees to add courses. During this time students may add courses without written approval, unless the course is filled or will cause a credit overload. If the course will cause a credit overload, Arts and Sciences students need approval from the Arts and Sciences Advising Office, while Engineering students will need the approval of their faculty advisor and the approval of the Engineering Advising Office. Approvals for credit overloads can be processed in the SIS by the student's respective advising office which will enable students to add the course(s) online.

An instructor's signature is required to add a course that is full. By the end of the second week of classes, students should have the schedule they want to keep. As an exception to this policy, students may enroll in Independent Study, Independent Research, Thesis, and/or Internship until the end of the sixth week of the semester.

For fall and spring courses that are scheduled for less than the full semester, the last day to add will vary based upon course length and start date. Please see the Registrar's Office (https://studentaffairs.jhu.edu/registrar/students/registration) website for details. For intersession and summer deadlines, please refer to the Intermission (http://pages.jh.edu/intermission) or Summer (http://pages.jh.edu/summer) Programs websites.

When adding courses in other divisions or at schools in the Baltimore Student Exchange Program (BSEP), Homewood undergraduates must follow the deadlines set by the host school or division. In the School of Public Health, the add deadlines are based on the quarter system, not the semester system that is used in other JHU divisions.

Dropping a Course

Courses may be dropped from the student's record until the end of the sixth week of the semester, provided that the student remains registered for a minimum of 12 credits. For engineering students, faculty advisor approval is required to drop a course after the second week of classes.

For fall and spring courses that are scheduled for less than the full semester, the last day to drop will vary based upon course length and start date. Please see the Registrar's Office (https://studentaffairs.jhu.edu/registrar/students/registration) website for details. For intersession and summer deadlines, please refer to the Intermission (http://pages.jh.edu/intermission) or Summer (http://pages.jh.edu/summer) Programs websites.

When dropping courses in other divisions or at schools in the Baltimore Student Exchange Program (BSEP), Homewood undergraduates must follow the deadlines set by the host school or division. In the School of Public Health, the drop deadlines are based on the quarter system, not the semester system that is used in other JHU divisions.

Withdrawing from a Course

After the end of the sixth week and until the end of the eleventh week, a student may withdraw from a course with a W on their academic record. A record of the course will remain on the academic record with a W appearing in the grade column to indicate that the student registered and then withdrew from the course. Students are not allowed to withdraw from a course after the end of the eleventh week of the semester. Course withdrawals must be conducted in person at the Office of the Registrar using an add/drop form. Engineering students need the signature of their faculty advisor on the add/drop form. No signature is required for Arts and Sciences students to withdraw from a course.

Withdrawing from a course may adversely affect a student's academic standing and/or financial aid satisfactory academic progress, even with official approval, and students should discuss these topics with the respective offices prior to submitting signed add/drop forms to the Office of the Registrar.

For fall and spring courses that are scheduled for less than the full semester, the last day to withdraw will vary based upon course length and start date. Please see the Registrar's Office (https://studentaffairs.jhu.edu/registrar/students/registration) website for details. For intersession and summer deadlines, please refer to the Intermission (http://pages.jh.edu/intersession) or Summer (http://pages.jh.edu/summer) Programs websites.

When withdrawing from courses in other divisions or at schools in the Baltimore Student Exchange Program (BSEP), Homewood undergraduates must follow the deadlines set by the host school or division. In the School of Public Health, the withdrawal deadlines are based on the quarter system, not the semester system that is used in other JHU divisions.

Full-Time Student Status

Undergraduate students at Johns Hopkins University must be registered for a minimum of 12 credits each semester. Students who have not completed degree requirements after eight full-time semesters may register for less than 12 credits and pay for courses on a per credit basis with the permission of their respective academic advising office.

Fall and Spring Semester Credit Requirements and Limits

Credit is an approximate measure of the work required in a course. For undergraduate courses, the number of credits is normally equal to the number of hours that the class meets each week. Some laboratory courses are exceptions to this rule, meeting more hours per week than the credits awarded. Graduate-level courses completed by undergraduates are generally awarded the same number of credits as an upper-level undergraduate course (3 credits).

For Arts and Sciences (AS) students, the average course load is 15 credits per semester for eight semesters. For Engineering (EN) students, the standard load is 16-18 credits. AS freshmen are limited to 17 credits, while AS upperclassmen are limited to 18.5 credits. EN freshmen are limited to 18 credits (18.5 if including a foreign language), while EN upperclassmen are limited to 19.5 credits.

Undergraduate students must maintain full-time status by registering for at least 12 credits in fall semesters, and in spring semesters.

Intersession and Summer Credit Limits

Students may take a maximum of 3 credits during intersession.

During the summer, students may take a maximum of 14 credits total, with a limit of 7 credits per session.
Exceptions to These Credit Limits

Arts and Sciences students who wish to take a credit overload must meet one of the following criteria:

- Double degree students who are taking courses at both Peabody and Homewood
- Seniors in their eighth semester
- Upperclassmen who made Dean’s List in the prior semester

Credit overloads for arts and sciences students require approval from AS academic advising.

Exceptions for EN Students

Credit overloads for engineering students are approved on a case-by-case basis. EN students who wish to overload credits need their faculty advisor’s signature, then final approval by the EN Advising Office. Usually, the student’s most recent academic performance is a factor in the decision. First-semester freshman are not granted credit overloads.

Registration and Restrictions

The following content is included on this page:

Registration Alerts (p. 14)
Retaking a Course (p. 14)
Prohibition on Registering for Courses that Meet at the Same Time (p. 14)
Restrictions on Equivalent Courses and Courses Taken Out of Sequence
Policy on Statistics Courses Sequencing (p. 15)
Important Note About Credit and Grades for Language Courses (p. 15)
Instructor’s Permission (p. 16)
Auditing a Course (p. 16)

Registration Alerts

Registration alerts may be applied to student records for a variety of reasons, such as outstanding financial obligations, insurance and health clearances, academic standing, and missing emergency contact information. A student whose registration has been placed on hold for a non-academic reason must obtain clearance from the office or offices that placed the hold on registration. Transcripts will not be released for students with unpaid balances.

Students who have three or more incomplete grades from the previous semester may have a hold placed on registration activity. The student must have an approval signature from their respective advising office to register, add, or drop.

Retaking A Course

Students may retake a course to absolve a grade of C+ or lower. The grade for the second attempt and the associated credits are recorded on the transcript and are calculated into the GPA. The original grade remains along with the notation “R” to indicate the course was retaken, and the original grade does not affect grade point calculations, nor does it carry credit toward graduation. Only the grade in the retaken course accrues credit and applies to the GPA, even when the retaken grade is lower than the original grade. However, if a student drops or withdraws from the subsequent attempt the original grade is calculated into the GPA. A student may retake one course without written permission. Taking the same course a third time or retaking another course requires written permission of the student’s respective academic advising office.

A course originally taken for a letter grade must be retaken for a letter grade. A course taken under the Satisfactory/Unsatisfactory grading option must be retaken under the Satisfactory/Unsatisfactory grading option. First semester courses whose grades are covered by S/U notation are considered to have been taken for a letter grade. If a student wants to retake a course from the first semester, the second attempt must also be for a letter grade.

To absolve a grade, the same course must be taken at Hopkins, not at another college or university. In situations where the same course is no longer offered, students may be able to absolve a grade in one of two ways:

1. by repeating a course of comparable content and level, or
2. as an independent study

Both of these options require approval of the department and/or instructor responsible for the course, and the student’s respective academic advising office.

Other Restrictions on Absolving a Grade

Grades may not be absolved by retaking a course after graduation.

Grades assigned by the Ethics Board due to an academic ethics violation may not be removed from the academic record by retaking the course.

Prohibition on Registering for Courses that Meet at the Same Time

Registering for two classes that meet at the same time or at overlapping times is not permitted except as a temporary measure during the first two weeks of the semester when students are still deciding on which classes to take. By the end of the first two weeks of classes, students must resolve time conflicts in their schedules.

Restrictions on Equivalent Courses and Courses Taken Out of Sequence

Courses that are sequential in nature, e.g., elementary, intermediate, and advanced language courses, or the Calculus sequence, must be taken in their proper order. One exception to this policy is that AS.210.301-302 may be taken in reverse order with permission of the department.

Credit will be awarded only once for equivalent courses covering the same material. Examples of equivalent courses are Intermediate French and Advanced Intermediate French, and AP Calc AB and Calculus I. This restriction does not apply to the Expository Writing course which may be taken twice. Be aware that departments may change course numbering or titles without changing the course content. Students who believe that they have registered for an equivalent course should consult with their academic advising office.

The following restrictions apply to overlapping and the sequencing of courses in the Mathematics and Applied Mathematics and Statistics Departments:

- Students who earn credit for AS.110.201 Linear Algebra cannot receive credit for the combined course EN.553.291 Linear Algebra and Differential Equations or for the course AS.110.212 Honors Linear Algebra.
- Students who earn credit for AS.110.405 Real Analysis I cannot receive credit for AS.110.415 Honors Analysis I
• Students who earn credit for AS.110.406 Real Analysis II cannot receive credit for AS.110.416 Honors Analysis II
• Students who earn credit for AS.110.302 Differential Equations and Applications cannot receive credit for EN.553.291 Linear Algebra and Differential Equations.
• Students who earn credit for AS.110.202 Calculus III cannot receive credit for AS.110.211 Honors Multivariable Calculus.
• Students who earn credit for AS.110.311 Methods of Complex Analysis cannot receive credit for AS.110.407 Honors Complex Analysis.
• A student who earns credit in EN.553.291 Linear Algebra and Differential Equations may receive credit for further study of linear algebra or differential equations by enrolling for independent study. Normally students will earn 2 credits for such an independent study, but the number of credits may vary and is to be decided by the faculty sponsor. These students may not earn credit for AS.110.302 Differential Equations and Applications, AS.110.201 Linear Algebra, nor AS.110.212 Honors Linear Algebra.
• Students who earn credit for EN.553.426 Introduction to Stochastic Processes cannot receive credit for EN.553.427 Stochastic Processes and Applications to Finance.

Courses in the Economics Department with restrictions:
• Students who earn credit for AS.180.301 Microeconomic Theory may not earn credit for AS.180.401 Advanced Microeconomic Theory.
• Students who earn credit for AS.180.334 Econometrics may not earn credit for AS.180.434 Advanced Econometrics.

Policy on Statistics Courses Sequencing
Undergraduate students at the Homewood Schools of Johns Hopkins University enjoy a wide selection of courses on statistics; however, it is not allowable for a student to be awarded credit for two courses that cover essentially the same material. Likewise, it is not allowable for a student to receive credit for a more basic course after having received credit for a more advanced course in the same subject.

Our statistics courses fall into one of the following four categories, listed in increasing level of sophistication:
1. Non-calculus based, basic
2. Non-calculus based, intermediate
3. Calculus based, intermediate
4. Calculus based, advanced

A student may take at most one course (or course sequence) from within one of these categories. A student may not take a course in a lower numbered category after having taken a course in a higher numbered category.

Some departments may require their undergraduate majors to take specific statistics courses, however, all students are precluded from receiving credit for two courses that have much the same content, though they may have different emphases. This policy does not imply that a course in one of the above categories may be substituted for another course.

The list below shows the courses and sequences that are allocated to these categories. Examples:

- A student may take EN.553.111 but then may not subsequently take AS.230.205.
- A student who has taken EN.553.310 may not also take EN.553.311 or any of the courses in the first two categories.

Category 1: (Non-calculus based, basic course)
EN.553.111 Statistical Analysis I
AS.230.205 Introduction to Social Statistics
AP Statistics

Category 2: (Non-calculus based, intermediate course)
EN.553.211 Probability and Statistics for the Life Sciences
EN.553.230 Introduction to Biostatistics
AS.280.345 Public Health Biostatistics

Category 3: (Calculus-based, intermediate course)
EN.553.310 Probability & Statistics/EN.553.311 Probability and Statistics for the Biological Sciences and Engineering
EN.560.348 Probability & Statistics in Civil Engineering

Category 4: (Calculus-based, advanced course)
EN.553.420 Introduction to Probability-EN.553.430 Introduction to Statistics

Some courses do not fall into one of the four categories:
• EN.553.413 Applied Statistics and Data Analysis This course is mostly independent of the other probability/statistics courses, but subsumes enough of the non-calculus, basic course material such that no Category 1 course may be taken after EN.553.413.
• EN.553.112 Statistical Analysis II may be taken after any category 1, 2, or 3 course. However, the preferable sequence is EN.553.111 Statistical Analysis I-EN.553.112 Statistical Analysis II.

Equivalent Statistics Courses
The courses EN.553.310 Probability & Statistics and EN.553.311 Probability and Statistics for the Biological Sciences and Engineering are considered equivalent to each other and can be used interchangeably. In accordance with the course retake policy, a grade in one may be absolved by the opposite course.

Important Note About Credit and Grades for Language Courses
Both semesters of language elements courses in French, German, Greek, Italian, Latin, Portuguese, Spanish, Yiddish, and languages offered in the Near Eastern Studies Department must be completed with passing grades in order to retain credit for both courses. If study of the language is terminated after the first semester, the student will lose the credit for the course. The course and grade will remain on the academic record, but no credit will be awarded and the grade will not affect the grade point average. This change to the record is generally made in the last semester prior to graduation by the student’s academic advising office, but students can also request that the advising office make the change at an earlier point. Students do not have to take both semesters of the first year of languages taught through the Center for Language Education to retain credit from the first semester.
Students must take the language elements (or beginning/first year) courses for a letter grade.

Students in the School of Arts and Sciences do not receive an area designation for these elements (beginning/first-year) courses. For students in the School of Engineering, language elements (or beginning/first-year) courses can be substituted for humanities courses in meeting the distribution requirement.

**Instructor’s Permission**

Many graduate (600-level and above) courses in the School of Arts and Sciences and the School of Engineering offered in the graduate divisions of the university, and some advanced undergraduate courses, require the instructor’s approval. Engineering students also need their faculty advisor’s approval. If online enrollment is not available, students must use a paper registration or add/drop form, and the instructor’s signature is required.

**Auditing a Course**

Undergraduate students may not audit a course. By the end of the add period, a student may only attend or participate in courses for which they are enrolled.

**Registering for Independent Academic Work**

Independent Academic Work is the collective term used to encompass independent study, research, and academic internships. Independent study means a program of study and reading under the tutelage of a faculty member. Academic credit for independent study is based on work equivalent to class-based courses. Research involves planning and conducting experiments, collection and analysis of data, and the reporting of results. Academic internships are practical work experiences which have an academic component as certified by a member of the faculty.

All forms of independent academic work require early planning with a faculty sponsor. To receive academic credit, the independent academic work must include activity, exercise, and/or product that can be evaluated by a member of the AS/EN faculty whose field of expertise is closely enough related to the work for the faculty sponsor to competently evaluate the work, and certify that it merits academic credit.

Academic credit for independent academic work must be sponsored by a full-time member of the Homewood faculty. This is the case whether the work is done on-campus or off-campus. The work supervisor and the faculty sponsor may be the same individual. If the faculty sponsor is not the work supervisor, the work supervisor must provide the faculty sponsor with a report on the student’s achievements while doing the independent project, and the faculty member must certify how much academic credit the project merits.

Students who wish to pursue independent academic work begin by discussing their ideas with an appropriate faculty sponsor. That discussion must focus on what type of project the student envisions, and what possibilities for academic credit the faculty member envisions. If the student and faculty member agree on the type of project and its academic value, then the student should find a suitable research or work environment for the project.

No more than three credits may be earned for independent study or research in one semester or summer (sessions I and II combined); only one credit may be earned for an academic internship during one semester or summer. Additionally, no more than 6 credits of any type of independent academic work may be earned in one academic year (see exception for students graduating in their eighth semester or later (p. 31)). The academic year begins in May/June with the first summer session and ends in May at the conclusion of the spring semester. Independent work done for academic credit must be unpaid. Credits for research and independent study vary from 1-3 credits, and may be graded with either letter grades (A, B, etc.) or Satisfactory/Unsatisfactory. Each credit hour should reflect 40 hours of work on the project. Credit for an internship is limited to 1 credit, and the grading method is Satisfactory/Unsatisfactory only.

Students must register for independent academic work by the end of the sixth week of the semester. Students must adhere to the registration and add/drop deadlines during Intersession, and Summer.

Although academic credit is awarded for independent academic work, area designations are not assigned and the credit may not be used to satisfy the distribution requirement. The use of credit for independent academic work to satisfy the requirements of a major or minor is subject to prior written approval by the appropriate department or program.

**Registering for Courses in Other JHU Divisions During the Fall and Spring Semesters**

Qualified undergraduates may take courses at other divisions of the university by registering in person with the Homewood Registrar. Students submit an Interdivisional Registration (IDR) form, which is available in the Homewood Registrar’s Office in 75 Garland Hall, in the Office of Academic Advising Garland Hall Suite 300, or in the Office of Engineering Advising 103 Shaffer Hall. Courses taken at other JHU divisions must be taken for a letter grade, unless the course at the host division is offered on an S/U basis only. Approval(s) are required for all AS/EN students as indicated on the IDR form. All students must meet the course requirements as defined by the host division.

**Peabody Institute**

Peabody Conservatory offers courses that must be taken for grade and credit. Homewood undergraduates who are not enrolled in a music major, minor, or the Peabody Double Degree program may take only one nonperformance course per semester at the Conservatory, and may also take one performance course concurrently with the approval of the student’s respective academic advising office. Performance courses will receive 1 credit per semester unless taken as part of the Peabody Double Degree program.

Students taking lessons for the first time at Peabody Conservatory must complete an Application for Admission to the Peabody Conservatory of Music Interdivisional Program for Initial Enrollment, and an IDR form. These forms are available at the Homewood Registrar’s Office. Students may take private lessons at Peabody Conservatory with an instructor who is a Conservatory faculty member, or a Preparatory faculty member approved by the Deans of the Preparatory and Conservatory. Acceptance is on a space available basis following an audition to demonstrate intermediate or advanced skill. Auditions for Conservatory lessons are held in September. Students will be notified of their audition time by the Conservatory Registrar’s Office. Space in lessons is limited, and registration is on a first-come, first-served basis. There is a $190 fee per semester for one half-hour lesson per week ($200 for voice). Students who wish to take additional lessons will be charged.

The Conservatory schedule and deadlines can differ from those at Homewood. Students taking courses and lessons at the Conservatory must check these dates in the Peabody schedule of courses located at https://peabody.jhu.edu/academics/academic-calendar-resources/registrar/. Visit https://peabody.jhu.edu/academics/peabody-at-
homewood/ for additional information about taking lessons at the Conservatory.

Peabody Preparatory offers beginning level music lessons on a non-credit basis. IDR is not available for Homewood students seeking to enroll in music lessons through the Peabody Preparatory. Visit https://peabody.jhu.edu/preparatory/ for information on lessons offered, application, registration, and payment.

The Carey Business School and The School of Education

Students may register for approved courses in these two schools on a case-by-case basis. In order to register in the Carey Business School or the School of Education, students in Arts and Sciences and Engineering programs should use the Interdivisional Registration Form, available from the Homewood Registrar’s Office, which requires permission of their academic advisor and the appropriate school program director or advisor. Courses must be taken for a grade. Note that the Carey Business School and the School of Education students have priority in registering for these schools’ courses.

School of Medicine and Bloomberg School of Public Health

Undergraduates may register for courses in the School of Medicine and/or the Bloomberg School of Public Health with the approval of the faculty advisor, the course instructor, and the student’s academic advising office. Students must have an adequate background for the courses, and courses must be taken for a grade. Public Health Studies majors taking courses at the Bloomberg School of Public Health require only the Public Health faculty advisor’s approval signature.

Registering for Courses at Other JHU Divisions During the Summer

Degree-seeking students are permitted to IDR enroll during the summer term(s). Students must meet designated course prerequisites and/or be otherwise qualified for the desired course(s) at the following JHU divisions:

- Advanced Academic Programs (AAP) division of the Krieger School of Arts and Sciences
- Bloomberg School of Public Health (excluding offerings through the Summer Institute)
- Engineering for Professionals (EP) division of the Whiting School of Engineering
- Peabody Institute (permission required from Peabody Associate Dean for Academic Affairs)
- School of Advanced International Studies
- School of Education
- School of Medicine

Students should register using the IDR form, and pay for the course at their home division. The course, along with credits and grade, will appear on the student’s home division transcript. Approval from both the home and host divisions is required to ensure that the interdivisional enrollment is appropriate for the student’s degree. Summer courses in other divisions must be taken for a grade.

IDR enrollment is not available during the summer term(s) at the Carey Business School, nor the School of Nursing. Students seeking enrollment at either of these schools should pursue enrollment directly with the respective division.

Registering for Courses through the Baltimore Student Exchange Program

Undergraduates may take one course per semester (fall/spring only) at one of the several area colleges and universities that comprise the Baltimore Student Exchange Program (BSEP). This program includes the following colleges in the Baltimore area: Community Colleges of Baltimore County, Coppin State University, Goucher College, Loyola University Maryland, Maryland Institute College of Art, Morgan State University, Notre Dame of Maryland University, Stevenson University, Towson University, University of Baltimore, and University of Maryland Baltimore County.

Students who have received Air Force ROTC scholarships will register for the required ROTC courses at the University of Maryland College Park using the cooperative institution registration process described in this section.

Courses that are equivalent to those offered at the Homewood campus may not be taken through BSEP. Students register in-person with the Homewood Registrar. Students submit a BSEP registration form, which is available from the Registrar’s Office at 75 Garland Hall, or from the student’s academic advising office. The faculty advisor’s approval signature is required for all courses. An academic advisor from the student’s respective advising office must also sign the form. Submit completed registration materials to the Homewood Registrar’s Office.

Prior to the start of classes at the host institution, students may report to the host school’s registrar for additional assistance (for example, campus maps or id cards). JHU students enrolled through BSEP are not required to complete registration forms at the host institution, and no academic record is established at the host institution. There is no additional fee or tuition charge for courses taken through the cooperative education program, except when the host school charges a laboratory or materials fee. In that event, the student pays the fee directly to the host institution.

Courses at these schools must be taken for letter grades. Both grades and credits appear on the Hopkins academic record along with an indication of where the courses were taken. The grades are included in calculations of the grade point average.

Independent undergraduate work, special tutorials, or private study types of courses that consume a large portion of faculty time are generally not included in the BSEP program, nor are weekend or evening courses offered through continuing educational studies programs.

Cooperative Education in Engineering

Engineering students may participate in government or industry-based cooperative education programs. Students who have received an offer from an employer should contact the Engineering Advising Office at 410-516-7395 or wseadvising@jhu.edu.

ROTC

Enrollment in the Johns Hopkins University Department of Military Science ROTC Program prepares students for full- and part-time careers in the U.S. Army and its Reserve Forces, as well as providing leadership and management skills valuable in any profession. Freshmen interested in finding out about the military profession should enroll in a Military Science course. Contact the professor of military science at 410-516-4685 for enrollment procedures and scholarship information. Visit http://www.jhurotc.com/page.php?page=home for additional information.
### Final Examination Schedule for Fall and Spring Semesters

The Registrar establishes the final examination schedule. In rare cases, the official final exam schedule available on the Registrar’s website may slot three final exams on one day for a student. Students should contact their respective academic advising office for assistance in these instances. Instructors may administer final examinations only at the officially scheduled time, not during class time or during the reading period. Take-home final examinations, and other final exercises (such as papers) that are expected to be prepared for and completed after classes have concluded are due at the end of scheduled in-class final examination time for the course. All other papers can be due at any deadline during the semester set by the professor, including the reading and final examination periods. Students who are concerned that any of these policies are being violated by their instructors should notify their respective academic advising office.

The final exam schedule ([https://studentaffairs.jhu.edu/registrar/students/course-schedule](https://studentaffairs.jhu.edu/registrar/students/course-schedule)) is posted on the Office of the Registrar’s website.

### Grading Policies

Grades are submitted to the Registrar at the end of the semester. Grades can be viewed online by students using their JHED account and password. Students may designate authorized users to view final course grades in SIS.

### Grades and Grade Point Average Points

Each grade corresponds to a numerical grade point equivalent to allow the computation of a grade point average. S and U grades have no effect on grade point average. The grades and their grade point equivalents are as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Performance</th>
<th>GPA Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>Excellent</td>
<td>4.0</td>
</tr>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>Excellent</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>Good</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>Good</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>Satisfactory</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>Satisfactory</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>Satisfactory</td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td>Passing</td>
<td>1.3</td>
</tr>
<tr>
<td>D</td>
<td>Passing</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0.0</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory (C- and above)</td>
<td>N/A</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory (D+ and below)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Other marks are used in special circumstances as follows:

- **FEV**: Failure - ethics violation
- **I/Grade**: Incomplete/Reversion Grade (incomplete grade reverts to this letter grade at deadline unless alternate grade is submitted prior to that deadline)
- **MR**: Missing grade roster
- **MT**: Multi-term
- **NG**: No grade given, course completed
- **W**: Official withdrawal
- **X**: No grade reported by instructor

### Grade Points and Grade Point Average

To determine the grade point average, multiply the grade point equivalent by the number of credits for the course. Add the products (grade points earned), then divide the total by the number of credits in the computation.

#### A Sample Calculation of a Grade Point Average

<table>
<thead>
<tr>
<th>Grade</th>
<th>Credit</th>
<th>Grade Point Equivalent</th>
<th>Grade Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-</td>
<td>4</td>
<td>3.7</td>
<td>14.8</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>B-</td>
<td>3</td>
<td>2.7</td>
<td>8.1</td>
</tr>
<tr>
<td>C+</td>
<td>3</td>
<td>2.3</td>
<td>6.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13</td>
<td></td>
<td>38.8</td>
</tr>
</tbody>
</table>

GPA = 38.8 / 13 = 2.98

### Satisfactory/Unsatisfactory Grades

Undergraduates may select one course each semester and summer (across all summer terms) to take for Satisfactory/Unsatisfactory credit at JHU. Students indicate their S/U choice on their add/drop form. Arts and Sciences students need the advising office approval for courses within their major and/or for writing intensive courses. Engineering students need approval from their faculty advisor. Course instructors are unaware of which students in a class are registered for S/U credit. Instructors submit letter grades to the Registrar for all students in their course.

Students must decide whether to take a course on a S/U basis by the end of the eleventh week of the semester. This deadline applies to all courses, even those which may not have any graded work assigned or returned before the end of the eleventh week.

S/U grades have no effect on a student’s grade point average. On the academic transcript, students who earn a grade of C- or above in a S/U course receive Satisfactory credit and a mark of S is entered on the academic record. Students who earn a grade below C- in a S/U course receive no credit and a mark of Unsatisfactory is recorded on the academic record.

Under certain conditions, graduating students in their eighth semester or later may exceed the normal S/U grading limit. See Graduation Policies (p. 31) for details.

### Restrictions on Satisfactory/Unsatisfactory Grading

The S/U option applies only to courses in the fall, spring and summer terms in the School of Arts and Sciences and the School of Engineering. Only one course per semester or summer (across all summer terms) may be taken with the S/U grading option. However, an eligible student who registers for a course that is only offered for S/U credit may select an
additional S/U course in the same semester. Language elements courses must be taken for a letter grade.

If a student has taken a course for S/U credit and then changes to a major or minor that requires the course, the grade can be changed to a letter grade before graduation with the approval of the student’s academic advising office and the director of undergraduate studies for the relevant major or minor. If the S grade is acceptable for the new major or minor, the S grade will not be converted to a letter grade.

Incomplete Grades
Students who are confronted with compelling circumstances beyond their control which interfere with the ability to complete their semester’s work during the normal course of a term may request an incomplete grade from the instructor. Approval of such a request is neither automatic nor guaranteed. Procrastination or distraction by other pursuits are not regarded as compelling circumstances, and extensions in these situations are unfair to students who have completed their course requirements within the allotted time.

If the instructor agrees to grant an incomplete grade, the instructor and student must establish a timetable for submitting the unfinished work, but no later than the end of the third week of the subsequent semester. See below for specific information about graduating students. When entering an incomplete grade in SIS, the instructor must also enter a reversion grade. This is the grade that the student will receive if the missing work is not completed. For example, if the student, based on the coursework completed by the end of the semester, would receive a C+ grade without the missing work, then the grade of I/C+ is entered on the transcript. If the incomplete grade is not resolved within the allowed period (the end of the third week of the subsequent semester), the incomplete grade is automatically converted to the reversion grade (a C+ in this example). Effective Summer 2018, the grade of I/A+ is not an allowable reversion grade.

Students who are in good academic standing have until the end of the third week of the subsequent semester to complete the missing work by retaking the course. Students and instructors do not have an option in this situation.

Incomplete grades do not affect a student’s grade point average, which is based upon the grades that are available for the term. However, students with three or more incomplete grades on their record at the start of a semester may be prevented from making changes to their registration for the semester without the approval of the student’s respective academic advising office. Students who are on academic probation are not allowed to take incomplete grades in courses without the approval of their respective academic advising office. Unauthorized incomplete grades will be treated as failures when evaluating the work of students who are on academic probation. Authorized incomplete grades must be resolved no later than the deadline established by the student’s respective academic advising office if the student is on academic probation.

Special Rules for Graduating Students
Students with incomplete grades in required courses at the date of degree conferral will not graduate. Students with incomplete grades in courses that are not required for degree completion may still graduate. However, the deadline for completion is abbreviated; students must resolve incomplete grades within 30 days of degree conferral when the university closes the undergraduate record. If the work is not finished by the deadline, the reversion grade will be recorded. For the specific deadline relevant to each degree conferral, please consult with Academic Advising or the Office of the Registrar. For more details on incomplete grades and graduation, see Graduation Policies (p. 31).

Policy on Changing a Grade
Once an instructor has submitted a grade to the Registrar, grade changes can be made only in the case of error in grading, calculation, or transcription. Students with questions about grading should contact the faculty instructor who has sole authority to assess and assign course grades. If the instructor determines a change is warranted because of error, the change must be submitted to the Registrar’s Office by the end of the subsequent semester. Grade changes for graduating seniors must be submitted by the close of the undergraduate record.

Under extenuating circumstances when the student has engaged the services of the case managers in the Office of the Dean of Student Life, the following procedure may be used to withdraw a student from a previously graded course:

- Support for changing a grade to a withdrawal must be submitted by the Office of the Dean of Student Life to either the Arts and Sciences Office of Academic Advising or the Office of Engineering Advising
- Such support must include the last date of attendance, and the instructor’s approval
- The Registrar’s Office will process the course withdrawal, and note the academic record upon receipt of approval documentation
- Late withdrawals may adversely affect a student’s academic standing and/or financial aid satisfactory academic progress even with official approval

Retaking a Course
Policies about retaking a course can be found in the catalog. (p. 14)

First-Year Language Courses: Information about Credit and Grades
Policies about first-year language course can be found in the catalog. (p. 14)

Dean’s List
Students who earn a term grade point average of 3.50 or above in a program of at least 14 credits with at least 12 graded credits will be placed on the Dean’s List for academic excellence. An appropriate notation is made on the student’s academic record. Letters are sent to parents/guardians by the student’s respective academic advising office. The university places notification in your appropriate hometown newspaper, if you elect to follow the directions provided with the letter.

Class Rank
The university does not calculate class rank and therefore, cannot provide this information to students or outside parties.

Transcripts
Information about ordering transcripts is available on the Registrar’s website (https://studentaffairs.jhu.edu/registrar/students/transcripts). Partial transcripts of a student’s record will not be issued.
Class Attendance and Absences

Although there are no university regulations concerning attendance, students are expected to attend all courses regularly. Students should consult with their instructors and/or teaching assistants when they have missed classes to explain the reasons for their absence, and to stay on track in the course. Instructors are encouraged to establish their own policies regarding attendance, and it is the student’s responsibility to know those policies.

In certain courses regular attendance is given special importance. These include foreign language courses, as well as introductory courses in Writing Seminars, and Expository Writing. Instructors in these courses may lower a student’s grade for unexcused absences.

If a student is absent from classes over a period of several days without explanation, instructors are encouraged to inform the student’s respective academic advising office. In some cases, withdrawing from a course may be considered; however, the student must withdraw from a course before the end of the eleventh week of the semester, and still remain in at least 12 credits.

Absence From Class Due to Illness

The Student Health and Wellness Center (SHWC) does not provide excuses for students who miss individual classes, including required attendance classes or labs. For students who are seen at the SHWC for a serious or extended illness that causes them to miss a number of classes over several days and/or to miss major academic assignments (mid-term examinations, major presentations), the SHWC will provide verification of the visit to the student directly, and alert the Office of the Dean of Student Life. Verification will not be provided retroactively. It is the student’s responsibility to forward the verification to any professors/instructors who request it.

Since the absence from a final examination is excused only for the most serious of circumstances, the SHWC will provide verification of the visit for those students who are seen at the SHWC for treatment at the time of their illness only.

Students should be guided by the following:

1. Ask instructors about expectations for class attendance and what procedures they will follow for students who miss class or assignments. Such policies are determined by each instructor and will differ from class to class.
2. In the event of a missed class or inability to complete course work due to illness, contact the instructor to make whatever arrangements are necessary to make up any work.
3. Notify the professor promptly by email. This should be done before the missed class unless it is not possible to do so (for example, if hospitalized or incapacitated). In cases where prior notification is not possible, notify the professor as soon as possible.
4. Misrepresenting personal circumstances to a faculty member, SHWC staff, or any university official constitutes academic dishonesty and is grounds for action by the Academic Ethics Board.

Absence for Religious Holidays

Religious holidays are valid reasons to be excused from class. Students who must miss a class or an examination because of a religious holiday must inform the instructor as early in the semester as possible in order to be excused from class or to make up any work that is missed.

Approved Absences

The university encourages students to participate in varsity athletics and other significant extracurricular activities. Students who must miss a class or an examination because of participation in a scheduled in-season varsity athletic event must notify the course instructor as early in the semester as possible. Approved absences are granted at the discretion of the course instructor. When students must miss a scheduled examination, several solutions have been found by instructors. Students have been permitted to take an examination before leaving for the event, or coaches have served as proctors for examinations taken during the athletic event at approximately the same time as the other students in the course. Students have also been allowed to take the examination, or an alternative examination, upon their return from the athletic event.

Academic Standing Policies

Good Academic Standing

Students who maintain a minimum of 12 credits earned and a term GPA of at least 2.0 each semester are considered in good academic standing. In the rare circumstance that a student is given permission prior to the start of the semester to be enrolled in less than 12 credits, that student must complete 100% of the enrolled credits with a term GPA of at least 2.0 to remain in good standing.

Reviewing Academic Standing

Each academic advising office reviews student records at the end of fall and spring semesters to monitor academic standing. Based on this review, students may be placed on academic probation or academically dismissed.

Satisfactory Academic Progress

Satisfactory Academic Progress (SAP) refers to minimal standards for grades and cumulative credits required to receive financial aid. The SAP policy is available at https://finaid.jhu.edu/undergraduate-aid/apply-for-aid/undergraduate-sap/.

Academic Probation

At the end of each fall and spring semester, the academic advising offices review the records of all undergraduate students to evaluate the academic standing of each student. Students who earn less than 12 credits or earn a term GPA below 2.0 are placed on academic probation. A letter informing a student of this status and the terms of academic probation are sent to the student in January (for fall performance) or June (for spring performance).

The terms of academic probation are as follows: Students must complete at least 12 credits with a minimum term GPA of 2.0 in the next enrolled fall or spring semester. Students may also be required to achieve a cumulative GPA of 2.0 or above in order to be removed from academic probation. In making the GPA calculation, incomplete grades (I) may be calculated as failures (F). In addition, any grade in a satisfactory/unsatisfactory course may be taken into consideration.

Students who do not meet the terms of academic probation will be academically dismissed (p. 21). In some circumstances, a student may be continued on academic probation instead of being dismissed. A student whose term GPA falls below 1.0 or earns less than 6 credits may...
be dismissed without having been on academic probation the previous semester.

The advising offices send written notification to students who are placed on academic probation. Incomplete or missing grades may prevent timely notification. Students with a term grade point average below 2.0 or who earned less than 12 credits should consult with an academic advisor about their academic standing, even if they have not received the letter from their advising office.

Students on academic probation may be restricted from registering for the maximum course load. Engineering students on academic probation are permitted a maximum of 14 credits during the probation semester. A student's academic performance during the summer term or intersession will not affect his/her academic standing.

Academic Dismissal
A student on academic probation who has not met the terms of probation will be subject to academic dismissal from the university for a minimum of one semester and a summer. A student whose term GPA falls below 1.0 or earns less than 6 credits may be dismissed without having been on academic probation the previous semester.

Students may direct inquiries about the dismissal process to the Academic Review Committee of their respective advising office. Students who intend to return to the university in a future semester are encouraged to work with their academic advisor to develop a plan for their time away.

When a student is dismissed from the university, several offices are notified, and there are important consequences, as follows:

- Registrar’s Office: cancels the student’s registration for the next semester, and authorizes a refund of tuition paid for that semester (in accordance with policy);
- Office of Student Financial Services: suspends financial aid and work-study aid to the student;
- Housing Office: cancels the student’s housing contract if the student is in university housing;
- Office of International Services: performs duties as required by U.S. federal regulations regarding persons not eligible to study at the university.

Readmission after Academic Dismissal
The terms for readmitting a student who has been dismissed for academic reasons are established by the Academic Review Committee of their respective advising office.

Students are readmitted on academic probation and must meet those terms in their returning semester or face dismissal again.

Students who receive prior approval to complete courses at another college or university during the period of dismissal are subject to the university’s 12-credit limit on the number of transfer credits that can be applied toward graduation.

Readmission Requests
To apply for readmission, a dismissed student must submit a written request to their respective advising office. The request should include an analysis of what went wrong during the preceding two semesters of enrollment, a description of activities while not in attendance, and an academic plan for completing all degree requirements. Supplemental materials such as transcripts of courses taken elsewhere, letters of reference from work or volunteer supervisor, and/or letters of support from a mental/physical health care provider may be required. Students are encouraged to contact their academic advisor prior to submitting a written request for readmission.

Readmission and Financial Aid
Academic dismissal and financial aid suspension are two distinct actions and must be addressed separately. The Financial Aid Satisfactory Academic Progress (SAP) appeal process can be found online (https://finaid.jhu.edu/undergraduate-aid/apply-for-aid/undergraduate-sap). This appeal is in addition to the request for readmission to your advising office.

Subsequent Academic Dismissals
A student who is dismissed a second time will be required to separate from the university for a minimum of one year. A third academic dismissal is permanent.

Eligibility for Financial Aid
Degree-seeking students who are eligible to register are also eligible to apply for financial aid. Only U.S. citizens and eligible non-citizens (e.g., permanent residents) are eligible for Federal Title IV financial aid.

Students should be aware that JHU scholarship and grant funds are awarded for a maximum of eight semesters. Under some circumstances, a ninth semester may be awarded on appeal. Federal and state aid may be available for additional semesters.

Students are required to maintain full-time status by registering for at least 12 credits per semester. In rare circumstances, such as severe illness, a student may be permitted to register for less than 12 credits in a given semester. Even with this permission, less than full-time status may affect some types of financial aid.

Satisfactory Academic Progress
Satisfactory Academic Progress (SAP) refers to minimum standards for grades and cumulative credits required to receive financial aid. The SAP policy is available at https://finaid.jhu.edu/undergraduate-aid/apply-for-aid/undergraduate-sap/.

External Credit Policies
It is expected that the majority of credits applied towards degree requirements are earned by completion of courses taught at Johns Hopkins University by our faculty. We do recognize that some students may have other sources of college-level credit that could be applicable to some requirements. This section explains the conditions and restrictions regarding credits earned outside of JHU.

For full details about the application of external credits towards degree requirements, please see the Requirements for a Bachelor’s Degree (p. 7) and the Residency Requirement (p. 7).

Exam Credit
The information below describes the requirements for students entering JHU in Fall 2018. Students who entered JHU prior to Fall 2018 should view the appropriate archived catalog (p. 1010).

Advanced Placement Exams
To receive credit, Advanced Placement examinations must be taken prior to admission to the university.

If a student enters the university with credit from an Advanced Placement Exam and then takes an equivalent course for credit at the university, the
External Credit Policies

Credits from advanced placement (and lab class waiver, if applicable) will be disallowed. The credits and grade for the Hopkins course will appear on the academic record. The Advanced Placement Exam title also remains on the record, but the credit value is converted to zero. This policy also applies to IB credit, GCE credit, and credit from foreign exams.

<table>
<thead>
<tr>
<th>AP Exam</th>
<th>JHU Course</th>
<th>Score</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>AS.020.151 &amp; AS.020.152***</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Chemistry</td>
<td>AS.030.101 &amp; AS.030.102 and labs AS.030.105-AS.030.106****</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry</td>
<td>AS.030.101 and lab AS.030.105****</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>TR.270.100</td>
<td>4 or 5</td>
<td>4</td>
</tr>
<tr>
<td>Computer Science A</td>
<td>EN.500.112^</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Macroeconomics</td>
<td>AS.180.101*</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Microeconomics</td>
<td>AS.180.102**</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Calculus AB</td>
<td>AS.110.108******</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Calculus BC</td>
<td>AS.110.108******</td>
<td>3 or 4</td>
<td>4</td>
</tr>
<tr>
<td>Calculus BC</td>
<td>AS.110.108 and AS.110.109******</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Physics C</td>
<td>AS.171.101******</td>
<td>4 or 5</td>
<td>4</td>
</tr>
<tr>
<td>Mechanics</td>
<td>AS.171.102******</td>
<td>4 or 5</td>
<td>4</td>
</tr>
<tr>
<td>Statistics</td>
<td>EN.553.111</td>
<td>4 or 5</td>
<td>4</td>
</tr>
</tbody>
</table>

* Macroeconomics: Students who score a 5 on the Macro AP exam are placed out of AS.180.101 Elements of Macroeconomics and receive University credit. However, it does not count as one of the ten courses required for the economics major (or one of the six courses required for the economics minor).

** Microeconomics: Students who score a 5 on the Micro AP exam, and who pass a diagnostic test administered by Professor Hamilton will place out of AS.180.102 Elements of Microeconomics and receive University credit for it. However, it does not count as one of the ten courses required for the economics major (or one of the six courses for the economics minor). Interested students should make an appointment with Professor Hamilton.

*** Students who are awarded credit for AP Biology are exempt from taking the corresponding lab courses (AS.020.153 General Biology Laboratory I-AS.020.154 General Biology Lab II). The lab courses are waived but no credit is awarded. Students who have credit for AP Biology who take AS.020.151 General Biology I and/or AS.020.153 General Biology Laboratory I will lose the three credits for AS.020.151 General Biology I. Students who have credit for AP Biology who take AS.020.152 General Biology II and/or AS.020.154 General Biology Lab II will lose the three credits for AS.020.152 General Biology II.

**** Students who have credit for AP Chemistry but take either lab semester without the lecture course, will lose four AP credits for the corresponding lecture in addition to the lab. Students who take either lecture class without the lab will lose four AP credits for the corresponding lab in addition to the lecture. Effective fall 2014, students with AP Chemistry credits for AS.030.101 Introductory Chemistry I/AS.030.105 Introductory Chemistry Laboratory I may not take AS.030.102 Introductory Chemistry II/AS.030.106 Introductory Chemistry Laboratory II without taking AS.030.101 Introductory Chemistry I/AS.030.105 Introductory Chemistry Laboratory I at JHU (forfeiting four AP credits). Students with a score of 4 and therefore have credits only for AS.030.101 and AS.030.105 should take AS.030.103 in order to not lose AP credits. Alternatively, these students may start in AS.030.101 and AS.030.105, but will forfeit their AP credits. Students with a score of 5 and therefore have credits for AS.030.101/AS.030.105 and AS.030.102/AS.030.106 who take AS.030.103 Applied Chemical Equilibrium and Reactivity w/lab will lose four AP credits for AS.030.102 and AS.030.106. Alternatively, these students may start in AS.030.101/AS.030.105 and forfeit all 8 AP credits.

***** Students may receive credit for Calculus I via only one exam. Students who have AP Calculus I credits who take AS.110.106 Calculus I (Biology and Social Sciences) will lose four AP credits for AS.110.108 Calculus I. Students who have AP Calculus II credits who take AS.110.107 Calculus II (For Biological and Social Science) or AS.110.113 Honors Single Variable Calculus will lose four AP credits for AS.110.109 Calculus II (For Physical Sciences and Engineering).

****** Students who are awarded credit for AP Physics are exempt from taking the corresponding lab courses (AS.173.111 General Physics Laboratory I and AS.173.112 General Physics Laboratory II). The lab courses are waived but no credit is awarded. Students who have credit for AP Physics who take AS.171.101 General Physics: Physical Science Major I or AS.171.103 General Physics I for Biological Science Majors or AS.171.107 General Physics for Physical Sciences Majors (AL) will lose four credits for AS.171.101 General Physics: Physical Science Major I. Students who have credit for AP Physics who take AS.171.102 General Physics: Physical Science Major II or AS.171.104 General Physics/Biology Majors II or AS.171.108 General Physics for Physical Science Majors (AL) will lose four credits for AS.171.102 General Physics: Physical Science Major II. Students who have AP Physics - Mechanics C credit who take EN.530.123 Introduction to Mechanics I will lose four credits for AS.171.101 General Physics: Physical Science Major I. Students who take AS.171.105 Classical Mechanics I or AS.171.106 Electricity and Magnetism I may retain their AP Physics credits.

The applicability of AP Computer Science exam credits to the computer programming requirement of a particular major is determined by the academic department responsible for that major.

Higher Level International Baccalaureate Courses*

<table>
<thead>
<tr>
<th>Subject</th>
<th>JHU Course</th>
<th>Score</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>AS.020.151 &amp; AS.020.152, (labs AS.020.153 &amp; AS.020.154 waived with no credit)</td>
<td>6 or 7</td>
<td>6</td>
</tr>
</tbody>
</table>
Students who entered JHU prior to Fall 2015 should view the appropriate Transfer Credit noted on the student’s academic record. No academic credit is awarded for purposes only. In some cases, a waiver of the bypassed course(s) may be granted with no credit for these departmental exams or evaluations as they are for placement towards a degree requiring 120 credits. Students earning degrees requiring more than 60 credits; however at least 60 of the total degree credits must be earned in residence as a full-time student at JHU. See the Requirements for a Bachelors’ Degree section in the catalog for additional residency requirements. All transfer students may transfer up to an additional 12 credits after matriculation. The 12-credit limit on transfer credits does not include credit from Hopkins summer courses, Advanced Placement examinations, British General Certificate of Education courses, International Baccalaureate courses, or foreign certificate courses.

**Transfer Credit Limits**

**Students admitted directly from high school**

Students who enter the university from high school may transfer up to 12 credits from approved courses taken at other institutions, whether taken before or after matriculation. The 12-credit limit on transfer credits does not include credit from Hopkins summer courses, Advanced Placement examinations, British General Certificate of Education courses, International Baccalaureate courses, or foreign certificate courses.

**Students admitted as transfer students**

Students who enter the university as transfer students into the Krieger School of Arts and Sciences may bring in up to 60 transfer credits towards a degree requiring 120 credits. Students earning degrees requiring more than 60 credits in both KSAS and WSE may bring in more than 60 credits; however at least 60 of the total degree credits must be earned in residence as a full-time student at JHU. See the Requirements for a Bachelors’ Degree section in the catalog for additional residency requirements. All transfer students may transfer up to an additional 12 credits after matriculation. The 12-credit limit on transfer credits does not include credit from Hopkins summer courses, Advanced Placement examinations, British General Certificate of Education courses, International Baccalaureate courses, or foreign certificate courses.

**Transfer Credit Rules**

The following rules apply to both online courses and courses taken in a traditional classroom setting.

To be eligible for transfer credit, an approved course must be taken for a grade at an approved college and completed with a grade of C or better. In the United States, an approved institution is a 2-year or 4-year college or university that is accredited by one of the following regional accrediting agencies:

- Middle States Commission on Higher Education
- New England Association of Schools and Colleges, Commission on Institution of Higher Education
- North Central Association of Colleges and Schools, The Higher Learning Commission
- Northwest Commission on Colleges and Universities
- Southern Association of Colleges and Schools, Commission on Colleges
- Western Association of Schools and Colleges, Accrediting Commission for Community and Junior Colleges
- Western Association of Schools and Colleges, Accrediting Commission for Senior Colleges and Universities

Transfer credits from non-US academic institutions must be approved on a case-by-case basis by the academic advising offices in the respective schools. Non-US academic institutions must be degree-granting and recognized and authorized to issue academic records by the appropriate national (or regional) bodies in their home countries.

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**Foreign Certificate Exams**

Credit is awarded for grades of A or B on the British and Singapore General Certificate of Education A-Level courses in many of the subject areas included on the Advanced Placement exams and International Baccalaureate courses listed above. A grade of A in Physics on the GCE is awarded 8 credits. A grade of B is awarded 4 credits. AS and O levels are not accepted. Foreign certificate programs like the French Baccalaureate and the German Abitur are considered on a case-by-case basis. No foreign language credit is available for these exams. The rules regarding credit forfeiture described in the Advanced Placement Exam section above also apply to foreign exam credits.

**Exam Credits for Foreign Language**

Effective Fall 2015, the German and Romance Languages Department will not award any credit for Spanish AP/IB exams. French, German, and Italian will grant six credits for AP scores of 4 or 5 (IB Exams for 6 or 7) only after a student successfully completes two courses in that same language sequence at the intermediate level or higher. Visit [http://e-catalog.jhu.edu/undergrad-students/academic-policies/registration-policies/#language](http://e-catalog.jhu.edu/undergrad-students/academic-policies/registration-policies/#language) for additional information.

**JHU Placement Exams**

Some departments may offer placement exams or other evaluations that allow a student to bypass lower-level content in that department, most commonly mathematics and foreign language. No credit is awarded for these departmental exams or evaluations as they are for placement purposes only. In some cases, a waiver of the bypassed course(s) may be noted on the student’s academic record. No academic credit is awarded when a course is waived. Students should contact their respective academic advising office for additional information.

**Transfer Credit**

Students who entered JHU prior to Fall 2015 should view the appropriate archived catalog ([http://e-catalog.jhu.edu/archive](http://e-catalog.jhu.edu/archive)).

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* The rules regarding credit forfeiture described in the Advanced Placement Exam section above also apply to IB exam credits.
How the number of semester credits is determined
For courses offered in semester credits at the host institution, courses will be awarded the same number of semester credits at JHU. For example, if a Calculus I course is offered for 5 semester credits at another institution, it will be transferred to JHU as 5 credits, even though our parallel course is a 4-credit course. Credit for courses earned at a school using the quarter system will be converted to a comparable number of semester credits. One quarter credit is equivalent to 2/3 of a semester credit. Other unit systems will be convert to semester credits based on the transcript key provided by the host institution. If a key is not available, credits are evaluated such that one year of full-time coursework at the other school is considered proportional to one year of full-time coursework at JHU.

How transfer credits are posted on a JHU transcript
The following information is included for each course transferred to JHU:

- name of institution where course was taken
- course title
- JHU course equivalent (if any)
- credits awarded

The grades earned in these courses do not appear on the Hopkins record and therefore do not contribute to the grade point average.

Restriction on courses taken without a letter or numerical grade
Ungraded or pass/fail courses taken at another institution prior to matriculation at JHU, if approved, may receive credit if the host school states in writing that the mark represents a grade of C or better.

Restriction on transferring duplicate content
A transfer course will not be approved when the course content has significant overlap with other courses the student has already completed. Likewise, transfer students may not take courses at JHU with significant overlap with prior course content. In cases where a department requires a student to do this, the transfer credit will be zeroed out on the transcript.

Entering freshman with more than twelve transferable credits
Some students enter the university from high school with additional college coursework beyond the 12 credits that may be transferred. If these additional courses are equivalent to subjects that the university accepts for credit by Advanced Placement exams, and if the courses are needed to complete requirements for a major or are prerequisites for higher level courses that the student will take at JHU, then students may request that the department waive the comparable courses at JHU. Waivers do not carry semester credits. Students must contact their respective academic advising office for detailed information about how to obtain a waiver.

Credits earned at JHU prior to matriculation, including the JHU Pre-College Summer Program
A student who takes JHU courses prior to matriculation as a degree-seeking student may receive credit for those courses completed with grades of C or better, but the grades are not included in the undergraduate record. Because these courses were taken at JHU, they are not subject to the 12-credit transfer rule. Credits earned through this program may be applied to the 100-credit JHU residency requirement (applicable to freshmen matriculating fall 2014 and later).

Credits earned at other JHU schools in the summer
Students should refer to this section (http://e-catalog.jhu.edu/undergrad-students/academic-policies/registration-policies/#specialsituationstext) of the catalog for details about the policies related to credits earned at other JHU schools in the summer.

Credits earned through study abroad
For the purposes of fulfilling the JHU residence requirements, Homewood-approved study abroad courses posted as HA.xxx.xxx or TR.xxx.xxx on the transcript are considered in-residence and are included in the 100 credit residency requirement for students who enrolled directly from high school as freshmen. Transfer students should refer to the residency requirements section (p. 7) for applicability of study abroad credits. Students participating in study abroad programs must meet university residence requirements, including the requirement that they be on Homewood campus during their final semester prior to graduation.

Students may transfer a full-year of credit from Homewood Abroad Courses (HA) or up to 30 credits from authorized Study Abroad Transfer Courses (TR) toward their Hopkins undergraduate degrees. Students may apply up to 12 additional transfer credits from pre-approved programs abroad, with a 42-credit transfer credit maximum from all study abroad (HA/TR) and domestic courses combined. Students on Homewood Abroad Courses (HA) will be held to the same course load guidelines that apply to course loads and over loads on the Homewood Campus.

Students may enroll in a combination of semester and/or summer/intersession abroad programs, but students may not enroll in three consecutive fall/spring semesters abroad.

Transfer of credits from international institutions without pre-approval
Students who pursue coursework at an international institution without pre-approval may request these credits be transferred after completion. However, these credits will be reviewed and, if acceptable, will be processed as transfer credits, not study abroad credits. Therefore, these credits are subject to the 12 credit transfer maximum.

Deferred Admission
Students who have been accepted to the university may defer admission for up to two years with approval from the director of undergraduate admissions. Freshmen who have deferred admission begin their studies in the fall semester. The purpose of a deferral is to allow students to take time off in order to travel, work, or experience another culture. Deferrals are not granted for the purpose of studying at another institution. Students who wish to pursue academic studies during the deferment period may do so; however, the credits earned during the deferment period will not be applied toward the university’s degree requirements.

Special Note for Students on Disciplinary Suspension from Hopkins
While serving a disciplinary suspension, academic work completed at another institution will not be recognized for credit transfer to JHU.

Registering for Courses at Other Colleges and Universities After Matriculation
Students are required to seek pre-approval to transfer credits from courses completed at other institutions. A form for this purpose is available in the advising offices. Directions regarding appropriate signatures and required supplemental materials (typically a detailed course description and/or a course syllabus) are on the form. Courses must be taken for a letter grade and a grade of C or better is required.

In order to transfer credit for previously-approved summer work done elsewhere, students must arrange for an official transcript to be sent to the Office of the Registrar.
Courses at colleges and universities in the Baltimore Student Exchange Program (BSEP)
See Registering for Courses through BSEP (p. 16) in the Registration Policies section. BSEP does not operate during the summer session; courses taken at these institutions during the summer are considered transfer credit and are subject to the same rules and limits as courses from other colleges and universities.

Concurrent registration at JHU and another institution
Students may take courses at another institution when registered at JHU and have these courses transfer to JHU only if permission is granted before registering for the courses at another institution. During the fall and spring semesters, students must be registered at JHU for a minimum of 12 credits and the addition of courses at another institution may not exceed our maximum credit limit for the term. During summer term, the total credits across institutions may not exceed the 14 credit maximum. During intersession term, the total credits across institutions may not exceed the 3 credit maximum.

Policies Unique to Students Admitted to JHU as Transfer Students
• Transfer students who completed Advanced Placement or other exams during high school are subject to the same policies as students admitted directly from high school as of the term they matriculate at JHU. We do not transfer exam credits directly from another college or university transcript.
• Students who transfer from the Peabody Conservatory will be granted full credit for performance courses in their major instrument. For performance courses in other instruments, only one credit per semester will be awarded.

Description of Transferable Credit
In order to be transferable, a course does not have to match a currently existing JHU course; however, courses should cover topics that are broadly defined as part of the curriculum at Hopkins. For example, we do not regularly teach a course about horror films. However, since this is a film studies course and we have a major in film and media studies, it’s likely that this course would be eligible for transfer. A course can be transferred as either (1) a direct equivalent to one of our courses or (2) a generic course affiliated with a field of study. A course with an identical name at another institution is not necessarily going to transfer as directly equivalent to the course with the same title at JHU.

A maximum of 6 credits may be granted for courses which are in curriculum areas not covered by the fields of study in the School of Arts and Sciences and the School of Engineering.

Additional Details About Course Eligibility for Transfer:
Section One (p. 25): Common courses not accepted for transfer credit
Section Two (p. 25): Common courses with restrictions for transfer credit
Section Three: (p. 26) Non-domestic studies
Section Four (p. 26): Transferring writing-intensive courses

Section One: Common courses that will not be accepted for transfer credit:
Physical Education or Personal Health and Wellness Courses are not accepted.

• However, a maximum of 6 credits in the fields of nutrition, dietetics, or kinesiology if these courses were part of a curriculum leading to a college degree in the subject.

Study Skills or Career Development Courses are not accepted.
• However, courses that are in-depth studies of career paths within a field of study may be considered. Psychology courses in career counseling or learning theory may be accepted.

Math Courses Below the Pre-Calculus Level are not accepted.
• However, we do accept most introductory statistics courses. We will accept one course designed to review all necessary background for the study of calculus and to introduce the concept of the rate of change of a function.

Theology Courses are not accepted.
• However, we will consider comparative religion courses or other religion courses that study religion from an academic viewpoint.

Developmental English, English Grammar, or English as a Second Language Courses are not accepted.
• However, we do typically transfer "freshman composition" courses.

Independent Study, Research, or Internship Credits are not accepted
• However, hybrid courses that include lectures and graded assignments along with practical experiences are reviewed individually.

Trade Skill Courses are not accepted.
• Trade skills courses are defined as being part of an educational program leading to a specific trade such as (but not limited to) automotive repair, culinary arts, day care provider, or airplane pilot.

Computer Software Courses are not accepted.
• However, courses that teach some use of software, Internet design and security, basic programming in html or Java, computer aided-design or introduce field-specific software programs may be considered.

Section Two: Common courses with restrictions for transfer credit

Chemistry
General Chemistry courses intended to serve as a one year sequence for students in the sciences are transferrable. However, because of the variability of these courses, it is often not possible to transfer just one semester of two-semester sequences (or one or two quarters). Syllabi review is required to transfer these courses. Rudimentary introductory chemistry courses intended to prepare students for a year of general chemistry are not transferrable. One-semester chemistry courses intended for non-science majors designed to fulfill general education requirements for non-science student may transfer.

Organic Chemistry Lab
JHU offers a one-semester, three-credit course (AS.030.225 or AS.030.227) that is recognized by medical schools as being equivalent to other institutions' typical year-long introductory organic lab courses that are frequently 1 credit each. To transfer these lab courses from other institutions, students must take both semesters at the other institution,
as one semester alone is not transferable. If the course lecture and lab are taught as a single course unit at the other institution, students must take the full year-long sequence of the course lecture and lab in order to transfer the courses to JHU. Our course AS.030.228 is an intermediate level organic chemistry laboratory course intended for only chemistry majors and typically goes beyond other institutions’ expectations of students from introductory organic chemistry lab.

Physics

General physics courses, typically covering the topics of mechanics, heat, sound, electricity and magnetism, optics, and modern physics intended to serve as one year of physics study for students in the sciences, may be transferred if the course was taught using the principles of calculus. Those courses that do not require calculus knowledge will not transfer. Rudimentary introductory physics courses intended to prepare students for a year of general physics will not transfer. Introductory one-semester physics or astronomy courses intended for non-science majors, for example those offered to help students fulfill general education requirements, may be transferred.

Finance

We accept transfer credits for corporate finance courses that may include, but are not limited to, understanding the design and functioning of financial markets or modeling financial forecasting and decision making. We do not transfer credit for personal finance courses designed to teach the individual consumer about topics such as money management, budgeting, home mortgages, personal tax, individual insurance, or investing.

Graphic Design

In order to be considered for transfer, graphic design courses must be taught as part of the required curriculum for a major leading to a degree at the offering institution and the course content must include design theory and practices. These carry no area designation. Courses that focus solely on software usage will not transfer.

Website Design

In order to be considered for transfer, website design courses must be taught as part of the required curriculum for a major leading to a degree at the offering institution and the course content must include some programming components. Courses that solely focus on usage of productivity software such as word processing, spreadsheet, presentation, database, graphics editing, accounting, statistical processing, or webpage creation will not transfer.

Internet/Social Media

Marketing courses that discuss the effective use of social media concepts and tools, search engine optimization (SEO) or other analytical market analysis techniques, and content creation and management strategies for marketing campaigns will be considered. However, courses teaching effective use of the internet for personal research or educating the lay person about its structural design or usage of social media will not transfer.

Medical Terminology

In order to transfer a course teaching medical terminology, the course must have: 1) an emphasis on etymology from Latin and Greek (as opposed to just learning word parts per se; i.e. the course has to have some direct and explicit treatment of the ancient languages) and 2) a significant historical/cultural component, involving study of the history of medicine (including at least some ancient material).

American Sign Language

If offered for degree credit at the host institution, courses in American Sign Language may transfer. It is at the discretion of a department if the language may be used to fulfill the foreign language requirements of a major or minor.

College/University Orientation

Credit-bearing courses designed to promote student success may be considered for transfer. Courses should include topics such as: learning strategies, study techniques, career readiness, academic planning, and how to engage in the academic/campus community. Courses focused only on campus-specific topics will not transfer.

Section Three: Non-domestic studies

For those attending programs leading to the medical profession

In several countries around the world, students enter higher education programs that lead to a medical degree without the completion of the United States equivalent to a bachelor’s degree. We do not transfer credits from these types of programs.

US citizens who studied abroad prior to acceptance as a transfer student to JHU

Like our international students who studied internationally before transferring to Johns Hopkins, courses taken abroad by US citizens either through study abroad programs or direct matriculation at international institutions will be processed as transfer credits, not as study abroad credits. A transcript from the originating institution will be required.

Composition courses not taught in English

Courses taught in a language other than English that mimic the typical “freshman composition” or “expository writing” courses found in the United States will transfer. These courses will be reviewed for transfer credit as potential courses in our English Department (home of our Expository Writing Program), not as foreign language courses. They may not be used to meet the JHU writing-intensive requirement.

Current JHU students studying internationally in their home country

Please see study abroad eligibility restrictions (p. 28) for limitations during the academic year.

During the summer, courses may be taken in a student’s home country or country of citizenship. Students follow the procedures for pre-approval (p. 24) of transfer credits. Such courses are subject to the 12-credit transfer rule.

Courses unique to China

We do not transfer three commonly required courses: Introduction to Mao Zedong Thoughts, Ideological and Moral Cultivation and Fundamentals of Law, and Principles of Marxism.

Section Four: Details about transferring writing-intensive credit

Students may transfer up to 6 credits of writing-intensive credit for a course(s) under these conditions:
1. The course must meet University criteria (http://krieger.jhu.edu/ewp/writing-requirement) for a writing intensive course.

2. Students must take the course during the regular academic year, in either fall or spring semester (there is no writing-intensive transfer credit for summer courses).

3. Students must have a grade of B or higher in the course.

Except for courses completed in a study abroad program, review of transfer courses for writing intensive credit is conducted in the student’s respective academic advising office. Study abroad courses are handled by Patricia Kain, Director of the Expository Writing Program. To arrange a meeting, she may be emailed at kain@jhu.edu.

Students who wish to have a course evaluated for writing intensive credit, should:

- Confirm that their respective academic advising office has an official transcript for the course.
- Gather the necessary materials to apply for transfer of W credit. These materials include a syllabus for the course, a course description from the catalog or official website, and copies of the papers you wrote for the course. If you have the original papers with the instructor’s notes, bring them. All materials must be printed; they will not be reviewed electronically.
- Schedule a 30 minute meeting in advance with the appropriate academic advisor.
  - Arts and Sciences incoming freshmen meet with either Ami Cox or Kathie Sindt.
  - Arts and Sciences incoming transfer students meet either Ami Cox or Kathie Sindt (students should schedule with the advisor who is NOT their assigned academic advisor).
  - Engineering incoming freshmen meet with their assigned academic advisor, either Linda Moulton or Denise Shipley.
  - Engineering incoming transfer students meet with Linda Moulton.

### Study Abroad Policies

The Johns Hopkins University views international education as an integral component of its academic mission. Not only does the university actively encourage enrollment of a diverse international and multicultural student body, but it strives to provide students with educational opportunities throughout the world. More than 33% of Johns Hopkins undergraduates study abroad.

For undergraduates in the Krieger School of Arts and Sciences, and the Whiting School of Engineering, Johns Hopkins offers a wide variety of international opportunities including departmentally sponsored intersession and summer programs, semester-based programs, and full-year programs at major universities in the United Kingdom, Australia, New Zealand, Europe, Africa, Latin America, Asia and the Middle East.

Johns Hopkins accepts credit for coursework taken abroad toward major and minor requirements, as well as toward general graduation requirements. Most students who study abroad graduate on time. What is more, upon successful completion of a program abroad, students may choose to build upon their international experience in graduate or professional school. The advisors in Pre-Professional Advising, and the Career Center, work with Hopkins students to maximize the benefits of a program abroad.

Visit https://studyabroad.jhu.edu/ or call (410) 516-7855 for more information.

### Study Abroad Programs

Hopkins offers students three options for study abroad: departmental programs, direct enrollment programs, and approved/vetted third-party provider programs. Programs managed by Hopkins or third-party providers offer the highest level of on-site support. Exchange programs and direct enrollment are well suited to more independent students who prefer greater autonomy while abroad. We encourage students to consider their personal background and comfort levels when choosing a study abroad option.

#### Johns Hopkins Departmental Programs

Many academic departments sponsor study abroad programs that directly support major and minor requirements. Whenever possible, qualified students in these majors are encouraged to participate in departmental programs. Credit is approved, and may be applied toward major and minor requirements in the sponsoring departments. Hopkins departmental programs may vary with regard to the level of support that students receive while abroad. In many cases grades in Homewood Abroad (HA) courses from these programs will post on students’ Hopkins transcript and be included in students’ Hopkins grade point average.

Johns Hopkins Departmental Programs include the following categories:

- Semester and year programs managed by Hopkins or external organizations
- Johns Hopkins exchange programs
- Johns Hopkins Summer Programs Abroad
- Johns Hopkins Intersession Programs Abroad

#### Direct Enrollment in a University Abroad

Students may enroll in colleges and/or universities abroad after consulting with a Study Abroad Advisor. Students apply as visiting, non-degree students, and take regularly scheduled classes with national and international students.

Major/minor credits must be pre-approved by the Hopkins Director of Undergraduate Studies (DUS) for students’ majors and/or minors prior to participation. In most cases grades from Transfer (TR) courses from these program(s) will not post on the Hopkins transcript or be included in the Hopkins grade point average. Transcripts with grades from a U.S.-accredited School of Record will generally be available through a sponsoring institution if the direct enrollment was facilitated by an approved third-party provider.

#### Approved/Vetted Third-Party Provider Programs

The Office of Study Abroad and the Faculty Advisory Committee have vetted specialized programs that offer courses in specific areas, disciplines, or locations where direct enrollment may not be feasible. Sponsored by third-party providers, these specialized programs provide study abroad opportunities for language acquisition, field experience, research opportunities, and disciplinary courses often in less common locations.

Major/minor credits must be pre-approved by the Hopkins Director of Undergraduate Studies (DUS) for students’ majors or minors prior to participation. Third-party providers offer additional support services, including assistance with applications, housing, registration, visas, and onsite support. In most cases grades from Transfer (TR) courses from these program(s) will not post on students’ Hopkins transcript or be included in Hopkins grade point averages. Transcripts with grades from
a U.S.-accredited School of Record will generally be available through the third-party provider.

**Non-Approved Programs**

Johns Hopkins does not encourage students to participate in non-approved/vetted programs. Students with sound academic rationales for participation in a non-vetted program are required to meet with the Director of Study Abroad to petition approval of an alternative program.

**Eligibility**

Students are required to meet with a study abroad advisor prior to applying to study abroad. All study abroad programs must be approved by the Office of Study Abroad prior to participation in order to receive credit toward Hopkins degree requirements.

Eligibility for study abroad can vary by type of program. Students must meet the minimum eligibility requirements of both Johns Hopkins University and the program abroad.

**Johns Hopkins Eligibility Requirements:**

- Term GPA of 3.00 or higher the semester of application
- Students must complete at least 100 credits at the Homewood Campus
- Students must complete their last semester prior to graduation in residence at the Homewood Campus
- Students must be in good academic, disciplinary and financial standing
  - **Disciplinary Standing:** Students currently on university probation as a result of Student Conduct Code violations may apply for Study Abroad, but must have completed their probationary period prior to the start of their program abroad. Students with disciplinary sanctions more severe than university probation (e.g. Deferred Suspension, Suspension, or Expulsion) are not eligible to apply for nor participate in Study Abroad during the pending sanction. If a university disciplinary sanction occurs between the time of acceptance to and the start of a program abroad, Johns Hopkins will review the disciplinary action and may decide to withdraw the student from their program abroad.
  - **Financial Standing:** Students on financial hold at the time of registration for their program abroad must be cleared by the Office of Student Accounts. Registration and dispersal of financial aid may be affected if financial holds are not lifted prior to the start of a student’s program abroad.
- Leave of Absence: Students may not apply for study abroad while on any Leave of Absence type. Students must be enrolled in residence at the Homewood Campus the semester prior to taking a semester abroad. Study Abroad may not be deferred due to a Leave of Absence, and students will be required to reapply for Study Abroad upon their return from Leave of Absence.

**Program Eligibility Requirements**

Many programs have additional eligibility requirements. In some cases those requirements will be more stringent than the Hopkins minimum eligibility.

The program specific eligibility requirements might include:

- Language proficiency requirements: students must demonstrate language proficiency at the college level, either through courses taken at a U.S. college or university, AP credit, or university administered placement exams
- Cumulative GPA of 3.0 or higher (e.g. Oxford requires a GPA of 3.7 or higher)
- One year or more of college-level education
- Course prerequisites: students must have met course prerequisites, as determined by the host institution, in order to register for classes abroad.

**Credit and Residency Requirements for Study Abroad**

For the purposes of fulfilling university residency requirements, up to 30 credits from study abroad courses are considered “in-residence” and may be included in the 100-credit JHU residency requirement. A student may be awarded a full-year of credit from Homewood Abroad (HA) courses, or up to 30 credits from study abroad courses taken through direct enrollment or vetted programs, toward their undergraduate degree.

Students may transfer a full-year of credit from Homewood Abroad Courses (HA) or up to 30 credits from authorized Study Abroad Transfer Courses (TR) toward their Hopkins undergraduate degrees. Students may apply up to 12 additional transfer credits from pre-approved programs abroad, with a 42-credit transfer credit maximum from all study abroad (HA/TR) and domestic courses combined. Students on Homewood Abroad Courses (HA) will be held to the same course load guidelines that apply to course loads and over loads on the Homewood Campus.

Students may enroll in study abroad in a combination of semester and/or summer/intersession abroad programs, but students may not enroll in three consecutive fall/spring semesters abroad.

Students may participate in summer and intersession programs abroad any term after matriculation.

Students must have completed at least three semesters of coursework on the Homewood campus prior to enrolling in a semester/academic year program abroad. This means a student may study abroad for a semester, or academic year, beginning with the second semester of their sophomore year through the fall semester of their senior year. An exception to this policy is the Hopkins Oxford St. Anne’s College program which offers a full year abroad for sophomore students.

**Study Abroad in Home Country/Country of Citizenship**

International students are encouraged to take full advantage of study abroad opportunities by pursuing studies outside the United States and their home countries. Johns Hopkins will not approve study abroad at locations where students have completed secondary education or where they have lived and/or worked within eight years of matriculation at Johns Hopkins. Students who wish to take courses at universities in their home countries will be asked to petition the Faculty Advisory Committee for Study Abroad. Students must present a strong academic rationale for the program.

**Academic Policies**

**Matriculation Status**

All students on study abroad programs who have completed the mandatory procedures established by Johns Hopkins prior to departure remain enrolled as full-time, matriculated students. This official status is recorded as off-campus matriculated.

**Credits Required for a Semester/Academic Year Abroad**
Students are required to enroll in the equivalent of 15 credits per semester while abroad. Students who wish to take fewer than 15 credits, or more than 18 credits, a semester must obtain written permission from the Director of the Office of Study Abroad.

Credit for Courses Taken Abroad

Students may earn up to 30 credits for study abroad from any combination of academic terms – semester, academic year, summer, and intersession.

Students may transfer a full-year of credit from Homewood Abroad Courses (HA) or up to 30 credits from authorized Study Abroad Transfer Courses (TR) toward their Hopkins undergraduate degrees. Students may apply up to 12 additional transfer credits from pre-approved programs abroad, with a 42-credit transfer credit maximum from all study abroad (HA/TR) and domestic courses combined.

As part of the Hopkins application process, students are required to have pre-approval for transfer of credit for all overseas course work prior to studying abroad. Pre-approval of transfer credits toward major and/or minor requirements is granted by the Director of Undergraduate Studies (DUS) in the student’s academic department(s). Pre-approval of transfer credit toward distribution requirements is granted by the Director of Study Abroad. Final approval of credit and transfer of courses occurs after students have returned to Hopkins.

Courses must be completed with a grade equivalent of C or better to be eligible for transfer of credit toward a Hopkins degree. Transcripts from the program abroad should be sent to the Director of the Office of Study Abroad for credit evaluation and transfer of credit. The Director will contact the students when their official program transcript has been received.

Students should remember to save electronic copies of syllabi, course descriptions, reading lists, assignments, papers, and examinations. Students will need to submit these to the Director of Study Abroad and/or the DUS for their major(s) and/or minor(s) in order to complete the credit evaluation, and the transfer of credit.

Transfer of Credits from International Institutions without Pre-Approval

Students who pursue coursework at an international institution without pre-approval may request these credits be transferred after completion. However, these credits will be reviewed and, if acceptable, will be processed as transfer credits, not study abroad credits. Therefore, these credits are subject to the 12 credit transfer maximum.

Grades and Transcripts

Courses taken at overseas programs are entered onto the official Hopkins transcript along with the name of the host school and location of the study abroad program.

Grades from most Hopkins Departmental Programs (Hopkins Departmentally Sponsored Semester and Year Programs, Hopkins Summer Abroad and Hopkins Intersession Abroad) are posted on the JHU transcript, and are calculated into students’ term and cumulative GPAs. These courses will appear on the Hopkins transcript as AS/EN/HA courses with Hopkins course numbers (e.g. HA.100.320 – History of China).

All students on Hopkins Approved Programs (Vetted Programs and Direct Enrollment) must take courses abroad for a grade. Students will not receive credit for pass/fail courses taken abroad. Students must receive the equivalent of a C or higher in order to receive Hopkins transfer credit. Grades from Hopkins Approved Programs do not appear on the Hopkins transcript, and will not be calculated into JHU GPAs. These courses will appear on students’ transcripts as TR courses (e.g. TR.100.300 – History of China). Students’ transcripts reflect how credits earned abroad have been awarded toward their Hopkins degree.

Housing Policy

Johns Hopkins University vets and approves study abroad programs based on academic quality, cultural immersion, and health/safety practices. Housing is an integral aspect of the abroad experience in that it promotes language and communication skills and provides opportunities for personal growth. In addition, housing organized by program sponsors provides an additional layer of safety and security.

For these reasons, JHU requires the use of program-established housing in home stays, residences, dormitories, or program-provided apartments by all Hopkins students on approved study abroad programs. Furthermore, JHU strongly encourages students to participate in a home stay experience if that option is available. Students who want to make independent housing arrangements should set up an appointment to meet with the Director of Study Abroad to discuss options and petition for approval.

Study Abroad at Locations Under Department of State/WHO/CDC Travel Warning

Travel Warnings are issued by the United States Department of State to describe long-term, protracted conditions that make a country dangerous or unstable. A Travel Warning is also issued when the U.S. Government’s ability to assist American citizens is constrained due to the closure of an embassy or consulate or because of a drawdown of its staff. The WHO and CDC post travel warnings and alerts in the event of public health crises.

JHU does not permit undergraduates to study abroad in locations with travel warnings. Despite this warning, if a student believes he or she has a sound academic reason to study at a chosen site, the student may file a petition for individual exemption in order to have their course work recognized for academic credit at Johns Hopkins.

Financial Structure of Study Abroad

Departmental Programs (semester/academic year)

Students studying abroad in semester and/or year JHU departmental or exchange programs are charged Hopkins tuition. In most cases, an additional fee is assessed to cover services that might include housing, international health insurance, emergency services, and logistical and academic support. Students are billed through the Hopkins Student Accounts Office.

Departmental Programs (intersession/summer)

Students studying abroad in a Hopkins departmental summer or intersession program are charged the program fee and billed through Hopkins. Fees vary by program, with some including charges for services such as airfare and/or meals.

Direct Matriculation and Vetted Programs (semester/intersession/summer)

Students who study abroad through an external program (direct enrollment at a university abroad or approved provider) are charged the cost of their program as established by the host university or provider, and a study abroad and application fee equivalent to 12% of JHU tuition.
JHU is responsible for making direct payments to host universities and providers on behalf of students. Fees will be posted to a student’s Hopkins SIS account by the Homewood Student Accounts Office.

Additional Costs Associated with Any Program Type

Students are responsible for all additional costs that are not included in mandatory fees. Additional costs may include: housing, airfare, personal expenses, meals, visas, and other incidental expenses. Some programs may include costs for many of these services as part of their mandatory fees. In those cases Hopkins will include those fees when making direct payment to the provider on behalf of students.

Billing

Study Abroad fees will be assessed to students’ SIS accounts by the Homewood Student Accounts Office.

The Homewood Student Accounts Office posts charges in SIS on or about July 1 for the fall semester, December 1 for intersession, December 1 for the spring semester, and April 1 for summer. Payment arrangements may be made through the Homewood Student Accounts Office.

The Office of Study Abroad creates a program financial budget worksheet for each student which reflects the estimated cost of attendance for his or her program, and details which fees will be posted on student’s JHU account. The financial budget worksheet should be used to assist students and their parents in calculating expenses (the cost of attendance) associated with an academic program abroad. In addition, the Office of Study Abroad provides sample financial worksheets for programs commonly attended by Hopkins students.

Financial Aid

Johns Hopkins extends portability of federal, state and institutional financial aid to Johns Hopkins Departmental Study Abroad Programs, Approved Study Abroad Provider Programs, and to Direct Enrollment in a University Abroad for the fall semester, spring semester or academic year. Financial aid, including institutional aid may be applied toward the cost of these programs.

For the semester study abroad, the JHU Grant will not increase, even if the study abroad cost is greater than the cost to attend Hopkins. However, the JHU Grant for the semester study abroad may decrease if the study abroad cost is less than the cost of attendance at Hopkins. Students’ financial aid will be credited to their student accounts.

Only loan assistance can cover additional expenses. In most cases, financial aid does not apply to summer and intersession programs. Students may be eligible for external study abroad scholarships.

Refund Policy

Students with credit balances may request a refund. Refund requests cannot be processed any earlier than 10 days prior to JHU’s first day of classes for each semester. Refund information is available at https://studentaffairs.jhu.edu/student-accounts/refunds/.

Students should consider study abroad options carefully prior to making a commitment. Students who withdraw from a study abroad program after having submitted their program acceptance form(s) or Hopkins acceptance form(s), are responsible for all non-recoverable costs associated with their program. After receipt of a final billing statement from the student’s program, Hopkins will refund recoverable expenses, excluding non-refundable deposits. Recoverable expenses are determined by the program provider in consultation with JHU. If for any reason study abroad plans change, the Office of Study Abroad should be contacted immediately so that the financial impact of the voluntary withdrawal can be determined.

Students involuntarily withdrawn or dismissed from a program for cause will receive no refund, may not be eligible for credit for coursework completed on the program abroad and are responsible for any costs incurred by early dismissal.

Should Hopkins cancel or suspend a study abroad program, we will work with students to either refund recoverable costs or apply fees toward alternate academic programs.

Conduct and Ethics

Conduct

Students are responsible for their own actions, activities and behavior while participating on a program abroad. Serious consideration of health and personal circumstances should be taken in to account by students when applying for or accepting a place on a program abroad.

Students are obligated to be aware of and comply with local laws and customs while abroad. Respect of local customs includes the conscious awareness of cultural attitudes toward alcohol use and sexual behavior. As representatives of JHU in other countries, we ask that students behave in a manner that is respectful of the rights and well-being of others.

Conduct considered unacceptable to Johns Hopkins University includes, but is not limited to, excessive consumption of alcohol; loud and/or abusive behavior; sexual harassment; criminal conduct of any kind, including the purchase, sale, possession or use of drugs other than prescribed medication for legal medicinal purposes. Students’ must notify JHU Office of Study Abroad of any disciplinary or legal issues while abroad.

Students participating in programs abroad are expected to adhere to the Hopkins Undergraduate Student Code of Conduct (https://studentaffairs.jhu.edu/policies-guidelines/student-code), the policies of the program abroad and the terms set forth in the Study Abroad Conditions of Participation agreement.

Violations of the Code of Conduct, Conditions of Participation and Program Policies

Students who are alleged to have violated the Hopkins Undergraduate Student Conduct Code, the policies of the program, and/or standards of academic integrity while abroad will be reported to the program director, and the JHU Director for Study Abroad. If a violation is determined to have occurred, the program director in collaboration with the JHU Director for Study Abroad will take appropriate disciplinary action, which may include immediate dismissal from the program.

A student dismissed from a program for cause will receive no refund, may not be eligible for credit for coursework completed on the program abroad, and is responsible for any costs incurred by early dismissal.

Students must maintain both academic and disciplinary eligibility through the designated start of their study abroad program. Students’ academic and disciplinary records may be reviewed prior to departure. If records indicate a significant decline in GPA, if a cumulative or term GPA falls below JHU or program requirements, and/or if academic and/or disciplinary sanctions are imposed prior to departure, a student may be involuntarily withdrawn from an approved study abroad program.
Academic Ethics

All study abroad students are bound by the Johns Hopkins University Code of Academic Ethics both during the application process and while abroad. Students are obliged to refrain from acts which they know, or under circumstances have reason to know, violate the academic integrity of the University. Violations of academic ethics include, but are not limited to: cheating; plagiarism; submitting the same or substantially similar work to satisfy the requirements of more than one course without permission; submitting as one’s own the same or substantially similar work of another; knowingly furnishing false information to any agent of the University for inclusion in academic records; falsification, forgery, alteration, destruction or misuse of official University documents or seal. All students must sign a Conditions of Participation agreement to adhere to this policy as part of the application process.

Institutional Research Board (IRB)

Students participating in or conducting research abroad must complete the Hopkins IRB process in addition to any institutional review that may be required by the host institution. Failure to comply is a serious breach of research ethics. Students who fail to receive appropriate HIRB review of their research will not be able to use the research or data for projects, theses, courses or requirements at Johns Hopkins.

Graduation Policies

Applying to Graduate

Students who intend to graduate in the next academic year must complete an Application for Graduation as directed by their respective academic advising office. The university confers degrees three times per year and there is one annual commencement ceremony in May.

Graduating in May

Most students who enter the university directly from high school graduate in May, after eight semesters of full-time enrollment. Full-time enrollment is a minimum of 12 credits. Part-time enrollment is not permitted within a student’s first eight semesters. Students are required to have full-time status in the semester immediately prior to graduation, and must therefore be enrolled for at least 12 credits in the final semester even if all course and credit requirements could be met with fewer than 12 credits.

Graduating in August

A small number of students complete their degree during the summer. Students who have completed eight full-time semesters may graduate in the summer if all degree requirements have been satisfied by the degree conferral date (last Friday in August preceding the start of fall semester classes). Students who have not completed eight full-time semesters should see the Graduating Early (p. 31) policies.

Graduating in December

A small number of students complete their degree at the end of the fall semester, which does not include Intersession. Students may graduate in December if all degree requirements have been satisfied by the degree conferral date (December 30th or the preceding Friday if the 30th falls on a weekend). Students are required to maintain full-time status, enrolled for at least 12 credits in their final semester, unless they are in their ninth semester or later.

Note for students who entered as transfer students

Transfer students are not subject to the eight semester full-time restrictions as listed above. Transfer students must complete at least four full-time semesters at JHU before they are eligible to graduate.

Completing Graduation Requirements

Students are responsible for completing the requirements for a bachelor’s degree as indicated at http://e-catalog.jhu.edu/undergrad-students/academic-policies/requirements-for-a-bachelors-degree/. All grades and credits for courses that are required for graduation must be submitted in time to clear students for graduation.

Each student expecting to graduate will receive a final bill from the university. It is university policy that all outstanding accounts must be paid in full before a student’s diploma may be released.

Students who have not completed degree requirements after eight full-time semesters (or four full-time semesters for transfer students) in college may register for less than 12 credits, and pay for courses on a per credit basis. With approval of the director of the student’s respective academic advising office and the major department (in the case of courses required for the major), these students may take courses elsewhere to meet the remaining graduation requirements, but must observe the 12 credit limit on transfer credit. These students also may have part-time status in the semester when they graduate. If applicable, students should consult with the Office of Financial Aid prior to part-time enrollment. Part-time undergraduate students are not be eligible for coverage if enrolled through JHU’s Student Health Benefits.

Graduating students who are taking courses through the Baltimore Student Exchange Program or in other divisions of the university must make arrangements with their instructors on the first day of class to have final grades submitted to the host registrar and then to the Homewood Registrar by the Homewood deadline for submitting grades for graduating students. If such an arrangement cannot be made, students should not remain enrolled in the course.

Students who graduate in December may remain in university housing and/or continue to participate in student organizations only if they enroll for a minimum of 6 credits during the following spring semester.

A student will not be graduated with unresolved outstanding charges of misconduct or academic ethics violations.

The university does not guarantee the award of a degree. The award of degrees is conditional upon (1) satisfaction of all degree and instructional requirements in effect at the time of matriculation as a degree-seeking student (as published in the relevant annual catalog), (2) compliance with the current university and divisional regulations, and (3) performance meeting the bona fide expectations of the faculty.

No member of the faculty is obliged to provide students or graduates with an evaluation or letter of recommendation which does not accurately reflect the faculty member’s true opinion and evaluation of the student’s academic performance and conduct.

Graduating Early (less than 8 semesters)

Students are eligible to graduate early at the end of the fall or spring semester if they have completed all requirements for graduation, including the residency requirement (p. 7). Students graduating early may not use intersession as a final term to complete remaining graduation requirements. Students may not graduate early during the summer except in the circumstances described below.
• Student has at most two incomplete grades in spring semester required courses, or
• Student has one incomplete grade in a spring semester required course and needs one required course in the summer, or
• Student needs one required course in the summer.
These students must meet with their respective academic advising office prior to the May commencement ceremony to file an August conferral plan. This plan requires proof of summer course registration, if applicable.

Incomplete Grades and Graduation Status
Students with incomplete grades or missing grades in required courses at the date of conferral will not graduate.

Students who have completed at least eight full-time semesters and have met the residency requirement and who receive one or more incomplete grades in their last semester in attendance, may complete those incomplete grades and are not required to register for additional coursework unless required for their degree.

Students who have completed less than eight full-time semesters and:
• who receive one or two incomplete grades in required course(s) during their intended last spring semester should review the Graduating Early (p. 31) policies.
• who receive three or more incomplete grades during their intended last spring semester are required to register for another full-time fall semester (at least 12 credits) in order to complete all degree requirements, including the residency requirement.
• who receive incomplete grades in required course(s) during their intended last fall semester must resolve these incomplete grades no later than the December degree conferral date or register for another full-time spring semester (at least 12 credits) in order to complete all degree requirements, including the residency requirement.

Last Semester Option
In their last semester before graduation, students may request that they be excused from taking the final examination in one or more courses. This option is solely at the discretion of the course instructor. This option is not available to students who are graduating early.

S/U Option in the Last Semester
Students in their final semester, who will have completed at least eight full-time semesters in college when they graduate and who are taking more credits than are needed to complete graduation requirements, may take one or more of the extra courses for S/U credit. Engineering students must have the faculty advisor’s permission, indicated by his/her signature on an add/drop form, to request this option. The faculty advisor’s signature indicates that the student will have completed all degree requirements without this course. In addition, a signature from the Engineering advising office is needed to confirm that the senior has applied for graduation in their eighth (or later) semester. Arts & Sciences students must seek approval from the Academic Advising Office.

Independent Work in the Last Semester
Students in their final semester, who will have completed at least eight full-time semesters in college when they graduate and who are taking more credits than are needed to complete graduation requirements, may take up to 6 credits of independent academic work, either graded or S/U. In addition, the usual limit of no more than 6 credits per year of independent academic work will be waived if the additional credits are for extra credit work done in the final semester.

Graduation Closes the Undergraduate Record
Upon graduation, the undergraduate record is closed. The only permitted changes are the resolution of incomplete grades, missing grades, and grade errors. These changes must be resolved by the first Monday after 30 days have lapsed since the degree conferral date. Students wishing to take additional courses at JHU after graduation should refer to Alumni Enrollment (p. 11) policies.

General and Departmental Honors at Conferral
Students may receive general honors, departmental honors, or both at conferral. General Honors are awarded to students with cumulative grade point averages of 3.50 or better. The final determination is made after all grades have been reported. Departments set their own standards for the award of Departmental Honors. Students should consult with the Director of Undergraduate Studies for their major about the requirements for honors.

General and Departmental Honors are noted on a student’s academic record following the student’s last undergraduate semester before conferral. In addition, honors are noted in the Commencement program. However, because the program is printed several weeks before the date of Commencement, not all honors are announced in time for inclusion in the program.

Completing an Honors Thesis
Students who are completing an honors thesis for Departmental Honors must complete the thesis before conferral. Students may not stay on after graduation to complete an honors thesis. Similarly, students graduating at midyear may not register part-time in the spring semester to finish an honors thesis.

Commencement
The university commencement ceremony is held once each year in May. The student’s respective academic advising office determines whether a student has completed all requirements, and clears the student for conferral and participation in Commencement. Students who graduate in August, December, and May are invited to participate in the Commencement Ceremony in May following their degree completion. Students who graduate in August may receive permission to walk in the May ceremony preceding degree completion if they file an August conferral plan with their respective academic advising office. The diploma and degree will not be awarded until all courses are completed successfully and recorded.

Student Affairs Resources
A successful college career is about making sure that what you do to get a degree is enhanced by pursuing interests that complement your studies. Student affairs is dedicated to helping you make your Hopkins experience as life-changing as it is mind-expanding. While our programs start by building community in the place where you live, the residence halls and the surrounding neighborhoods, that work goes a lot further. Whether it is helping you build career skills, work on strategies to succeed in class, embrace a physically and mentally healthy lifestyle, or connect with peers, student affairs has resources available to support you as you explore the many opportunities at JHU. Our dedicated staff members are here to answer your questions and support your journey.
To find out more about the resources available to students visit: http://studentaffairs.jhu.edu/resources/

University Policies

Divisional policies and guidelines assist students in understanding expectations, processes, and procedures during their time as JHU students. University policies and guidelines are maintained by the Office of the Vice Provost for Student Affairs.

Please visit https://studentaffairs.jhu.edu/policies-guidelines to view Student Affairs polices and guidelines.

Please visit https://www.jhu.edu/university-policies/ to view JHU's Policy and Document Library, a searchable resource for all university-level policies, statements, and guidelines. JHU community members can access this using their JHED ID.

Notice of Availability of Annual Security and Fire Safety Report


In keeping with the mandates of the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (Clery Act), the University's Annual Report contains statistics of certain crimes that are reported and that occurred on campus, in certain off-campus buildings or property owned or controlled by the University or an officially recognized student organization, and on public property within or immediately adjacent to and accessible from the campus for the three most recent calendar years. Also included are campus security policies including those related to missing student notifications, alcohol and drug use, sexual assault, relationship violence, and stalking, crime prevention, the reporting of crimes, and fire safety policies and statistics. All Johns Hopkins faculty, staff and students are encouraged to read and print out the report at http://security.jhu.edu/compliance-and-crime-statistics/index.html, and to report all criminal incidents promptly to your respective security department.

A printed copy of the annual crime report may be obtained from the security offices of Johns Hopkins:

- Applied Physics Laboratory 443-778-7176
- Homewood Campus 410-516-4631
- Medical Institutions 410-614-3473
- Peabody Institute 410-234-4600
- School of Advanced International Studies, D.C. 202-663-5808

Or, from the deans/directors/coordinators for our JHU Campuses and centers at:

- Baltimore, MD (Harbor East) 410-234-9301
- Bologna, Italy 202-663-5700 or International +39.051.2917.811
- Columbia, MD 410-516-9700
- Montgomery County, MD 301-294-7011
- Nanjing, China 202-663-5802 or International +86.25.8359.2436
- Washington, D.C. Zanvyl Krieger School of Arts and Sciences 202-663-5808

Photography and Film Rights Policy

(jhu.edu/news_info/policy/photography.html)
GRADUATE STUDENTS

Johns Hopkins University is proud to offer a rigorous and interdisciplinary graduate education taught by faculty who are academic and research leaders in their fields. Across the nine divisions of the university there are approximately 20,000 full-time and part-time graduate students working in over 180 fields of study. Combined with exceptional university facilities and resources, the endeavors of graduate students have contributed to groundbreaking discoveries, expansive and innovative collaborations, and the advancement of knowledge throughout the university and beyond.

The policies, procedures, resources, and opportunities included in this section are relevant for graduate students enrolled in the full-time degree programs in the Zanvyl Krieger School of Arts and Sciences (KSAS) and the Whiting School of Engineering (WSE) on the Homewood campus. Please use the links at the left to navigate to your topic of interest.

Student Right to Know Information
The Higher Education Act of 1965, as amended in 2008, includes many student disclosures and reporting requirements by universities. These requirements include statistics and/or information on the following subjects:

1. Retention and graduation rates;
2. Financial assistance available to students and requirements and restrictions imposed on Title IV aid;
3. Crime statistics on campus;
4. Athletic program participation rates and financial support; and
5. Other institutional information including: the cost of attendance, accreditation and academic program data, facilities and services available to disabled students, and withdrawal and refund policies.

For the full Student Right to Know page, please visit: http://homewoodgrad.jhu.edu/student-services/student-right-to-know/

Admissions and Finances

Admissions
Admissions for Full-time Graduate Programs
The Office of Graduate Admissions and Enrollment is available to answer questions about the Krieger and Whiting Schools’ full-time graduate program application process and respond to general admissions inquiries and requests for information. Please visit grad.jhu.edu for a complete list of graduate programs offered by the Krieger School of Arts and Sciences (KSAS) and the Whiting School of Engineering (WSE), and for information regarding the admissions process.

Admissions/Information for Visiting Graduate Students and Volunteers
The schools of Arts and Sciences, and Engineering recognize and appreciate the contributions of volunteers and visiting graduate students to its mission of education and research and has policies in place to enable both schools to retain and set forth requirements pertaining to volunteers and visiting graduate students. Interested applicants should visit: http://grad.jhu.edu/apply/visiting-students/ for more information.

Costs of Attendance and Financial Aid

Costs of Attendance
See the Office of Student Financial Services’ website for financial aid information (https://finaid.jhu.edu).

See the Office of Student Accounts’ website for tuition rates and refund schedule (https://studentaffairs.jhu.edu/student-accounts/tuition-fees).

Funding, Financial Aid, and Student Loans
Graduate students should contact their department(s) for information concerning funding support availability. Information for the Whiting School can be found here as well: https://engineering.jhu.edu/graduate-studies/graduate-financial-aid/. Students who are seeking federal financial aid are required to fill out a new FAFSA form every year if they wish to continue receiving financial aid. For more information on student loans and work-study opportunities, go to the Student Financial Services website (http://www.jhu.edu/finaid/grads.html) or visit their office in Garland Hall.

Fellowships

Diversity Fellowships
Johns Hopkins is a community committed to sharing values of diversity and inclusion in order to achieve and sustain excellence. We firmly believe that we can best promote excellence by recruiting and retaining a diverse group of students, faculty and staff and by creating a climate of respect that is supportive of their success. This climate for diversity, inclusion and excellence is critical to attaining the best research, scholarship, teaching, health care, and other strategic goals of the Health System and the University. Taken together these values are recognized and supported fully by the Johns Hopkins Institutions leadership at all levels. Further, we recognize that the responsibility for excellence, diversity and inclusion lies with all of us at the Institutions: leadership, administration, faculty, staff and students.

See https://grad.jhu.edu/apply/diversity/fellowships/.

WSE-Specific Graduate Fellowship Information
The Whiting School of Engineering offers a number of endowed fellowships that provide supplemental financial aid to incoming and current full-time engineering students. Full-time degree seeking graduate students are automatically considered for the fellowships. See the WSE Graduate Fellowship and Grants (https://engineering.jhu.edu/graduate-studies/fellowships-grants) website for more information.

KSAS-Specific Graduate Fellowship Information
The Krieger School of Arts and Sciences offers an incredible array of opportunities for student researchers in the areas of natural science, social science, and humanities. See the KSAS Research Awards and Opportunities (https://krieger.jhu.edu/research) website for more information.

Veterans Educational Benefits
Johns Hopkins is approved by the Maryland Higher Education Commission for the training of veterans, service members, eligible spouses and dependents under the provisions of the various federal laws pertaining to veterans’ educational benefits. Information about veterans’ benefits and enrollment procedures may be obtained at https://studentaffairs.jhu.edu/Registrar/veterans/ or veterans@jhu.edu the Office of the Registrar, 75 Garland Hall, 410-516-6635.
**Initial Enrollment**

Once admitted to the university, the student must complete an Application for Program of Education or Training (VA Form 22-1990) from the Department of Veteran Affairs (https://benefits.va.gov/gibill). A copy of the Certificate of Eligibility, along with a copy of the DD-214, is sent to the Veterans Desk, Office of the Registrar, 75 Garland Hall, Johns Hopkins University, Baltimore, Maryland 21218. Additional delivery options can be found at https://studentaffairs.jhu.edu/registrar/veterans/.

The student who is transferring from another university or college will need to obtain a Request for Change of Place of Training (VA Form 22-1995) from the Department of Veteran Affairs (https://benefits.va.gov/gibill). The completed form should be submitted to the VA, and a copy sent to the Veterans Desk at the university.

**Re-enrollment**

Students who received veterans’ benefits at the university the preceding semester and plan to enroll with no change of objective should inform the Veterans Desk, veterans@jhu.edu at the time of registration that they want to be recertified under the provisions of their eligibility.

Students receiving veterans’ benefits must take courses that lead toward the exact objective (usually a specific degree) on the original VA application. Otherwise, they must submit a Request for Change of Program (VA Form 22-1995). Students utilizing veterans’ benefits must let the Veteran School Certifying Official know immediately of any change in their program or status that might affect the amount of their VA payment. If they fail to do so, the Department of Veterans Affairs will seek reimbursement from the student for any overpayment.

**Standards of Progress**

Continuation of VA payments depends on the student’s meeting the university’s academic standards for all students. The student must also meet any standards of progress which may be established by VA regulations.

**Military TA**

For guidance with utilizing Military tuition assistance please contact veterans@jhu.edu.

**The College Navigator Tool**

Veteran students may go to the College Navigator (http://nces.ed.gov/collegenavigator) to access a school comparison tool.

**University Policies**

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**Notice of Availability of Annual Security and Fire Safety Report**


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- Medical Institutions 410-614-3473
- Peabody Institute 410-234-4600
- School of Advanced International Studies, D.C. 202-663-5808

Or, from the deans/directors/coordinators for our JHU Campuses and centers at:

- Baltimore, MD (Harbor East) 410-234-9301
- Bologna, Italy 202-663-5700 or International +39.051.2917.811
- Columbia, MD 410-516-9700
- Montgomery County, MD 301-294-7011
- Nanjing, China 202-663-5802 or International +86.25.8359.2436
- Washington, D.C.- Carey Business School 202-663-5808
- Washington, D.C. Zanvyl Krieger School of Arts and Sciences 202-663-5808

**Photography and Film Rights Policy**

(jhu.edu/news_info/policy/photography.html)

**Graduate-Specific Policies**

UNLESS NOTED SPECIFICALLY OTHERWISE, THE BELOW POLICIES APPLY TO BOTH CONTINUING AND NEW STUDENTS.

NOTE: Students are subject to any and all policies as listed below, and at http://homewoodgrad.jhu.edu/, and at https://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/, and at (https://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate)https://krieger.jhu.edu/, and at https://www.jhu.edu/university-policies/, as well as other JHU policies as defined by academic and/or administrative departments.

- Statement of the Rights and Responsibilities of Ph.D. Students at Johns Hopkins University (p. 36)
• Academic and Research Misconduct Policy (p. 36)
• Assistant Leave Policy (p. 36)
• Annual Review Policy (p. 36)
• PhD Advisor Policy (p. 37)
• Grievance Policy (p. 36)
• Jury and Witness Duty (p. 37)
• Homewood Schools (p. 37) Policy for Graduate Student Probation, Funding Withdrawal, and Dismissal
• Information Technology Policy (p. 37)
• G.W.C. Whiting School of Engineering - Specific Policies (p. 37)
• Zanvyl Krieger School of Arts and Sciences - Specific Policies (p. 37)

Statement of the Rights and Responsibilities of Ph.D. Students at Johns Hopkins University

Ph.D. education is fundamental to the University’s teaching and research mission. For an intellectual community of scholars to flourish, it is important to acknowledge the principles that underlie the compact between Ph.D. students, the faculty, and other members of the University community.

It is in this spirit that the Doctor of Philosophy Board, in collaboration with faculty and students from across the University, has articulated a statement of rights and responsibilities for doctoral students at Johns Hopkins. (http://web.jhu.edu/administration/provost/initiatives/phd_board/rights_responsibilities) The principles described in this document are to be realized in policies established by the various Schools of the University; the Schools will also develop mechanisms to monitor and enforce such policies.

Academic Misconduct and Research Integrity Policies

The Krieger School of Arts and Sciences (KSAS) and the Whiting School of Engineering (WSE) full-time programs and Engineering for Professionals have established the Academic and Research Misconduct Policy to address instances of misconduct by all graduate students enrolled in full-time, part-time or non-degree (special student) Krieger School of Arts and Sciences and Whiting School of Engineering graduate programs.


Procedures for handling allegations of research misconduct by full-time and part-time graduate students are available in the The University Research Integrity Policy. (https://www.jhu.edu/assets/uploads/2017/08/university_research_integrity_policy.pdf)

Assistant Leave Policy

To ensure the personal well-being and productivity of our graduate students, safeguard against excessive demands on graduate students’ personal time, and introduce a minimum standard across the two Homewood schools regarding leave, the Deans of KSAS and WSE have established guidelines for Research and Teaching Assistants to be able to take leave. A detailed description of the policy can be found here:http://homewoodgrad.jhu.edu/academics/policies/.

Annual Review Policy

Once per academic year, all full-time Homewood graduate programs are required to provide a written review to: (a) all doctoral students, and (b) all master’s students conducting thesis research.

Departments should include mention of funding continuation, as appropriate; as well as have a space for discussion about the student’s professional development goals and ways to develop strategies to achieve those goals. This review must include the opportunity for the student to offer self-evaluation. Students who fail to attain a program’s minimum level of performance may be placed on academic probation or dismissed using the procedures outlined in the Homewood Schools Policy for Graduate Student Probation, Dismissal, and Funding Withdrawal. In making these decisions, particularly that of dismissal, the program will take into consideration extenuating circumstances beyond the student’s control.

The Whiting School of Engineering has established a Guide to Effective Annual Reviews (https://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/#accordion-panel-10) to assist both advisors and students make these annual reviews a useful tool in the development of each student.

PhD Advisor Policy

A PhD student conducting research and/or in the writing phase of their degree program will not be able to remain in good standing with their academic and research progress if they do not have a research advisor*. A student who is unable to secure a research/dissertation advisor within 4 months may be placed on probation or terminated from the PhD program. Note that it is typically not the role of a department to find an advisor for a student. Different programs may have specific policies pertaining to the timeline of advisor assignments and grace periods for students switching advisors. Students should consult with their departmental Academic Staff and/or Director of Graduate Studies for guidance.

This policy applies to both continuing and new students.

* A research/dissertation advisor is best defined as a departmentally approved faculty member under whose guidance a student is conducting research and, in many cases, in whose lab/group the student is associated and expected to participate.

Grievance Policy

The WSE and KSAS created a Grievance Policy. Any faculty member, postdoctoral fellow or graduate student of either school may grieve an adverse action or failure to act, or for a violation of University, School or departmental policy. Typically a complaint or dispute is brought to the attention of a department chair or center director and is resolved through informal discussion. In some circumstances, the Dean is asked to help in the informal resolution of grievances. The formal procedure set forth below is not meant to supplant attempts at resolving complaints through informal means. When at all possible, complaints and disputes should be settled through informal discussion, though there are no circumstances under which a grievance must be settled informally.

Please note that nothing in our policy should be construed to impinge upon the responsibilities of any office and/or regularly constituted body of the University, and should be applied only after every effort has been made to settle disputes informally. Moreover, no action may be taken with respect to a grievance that would conflict with or modify any policy approved by the Board of Trustees of the University, any policy of the
The principle of academic freedom, a hallmark of Johns Hopkins University, is essential to the development of each student. It is in this spirit that the Doctor of Philosophy Board, in collaboration with faculty and students from across the University, has articulated a statement of rights and responsibilities for doctoral students at Johns Hopkins. The principles described in this document are to be realized in policies established by the various Schools of the University; the Schools will also develop mechanisms to monitor and enforce such policies. For more information see the Statement of the Rights and Responsibilities of Ph.D. Students (http://web.jhu.edu/administration/provost/initiatives/phd_board/rights_responsibilities).

**Annual Review Policy**

Feedback and Mentoring are crucial to the success of a PhD student. As such, there is an Annual Review policy for all Homewood PhD students. Once per academic year, all full-time Homewood graduate programs are required to provide a written review to: (a) all doctoral students, and (b) all master’s students conducting thesis research. Departments should include mention of funding continuation, as appropriate; as well as have a space for discussion about the student’s professional development goals and ways to develop strategies to achieve those goals. This review must include the opportunity for the student to offer self-evaluation. Students who fail to attain a program’s minimum level of performance may be placed on academic probation or dismissed using the procedures outlined in the Homewood Schools Policy for Graduate Student Probation, Dismissal, and Funding Withdrawal (http://homewoodgrad.jhu.edu/academics/policies/). In making these decisions, particularly that of dismissal, the program will take into consideration extenuating circumstances beyond the student’s control.

The Whiting School of Engineering has established a Guide to Effective Annual Reviews (https://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/#accordion-panel-10) to assist both advisors and students make these annual reviews a useful tool in the development of each student.

**THE BELOW POLICIES APPLY TO BOTH CONTINUING AND NEW STUDENTS, UNLESS NOTED SPECIFICALLY OTHERWISE**

### Student Enrollment Statuses

Graduate students in the full-time Arts and Sciences and Engineering degree programs based at Homewood are initially enrolled as full-time and are given a Resident status. Other registration statuses include: Graduate Study Abroad, Nonresident, Leave of Absence, Part-time and Visiting. Prior to a student changing his or her registration status, approval from the student’s degree program and appropriate office(s) must first be secured.

#### Degree-Seeking Graduate Students, KSAS

All KSAS fulltime students are required to be enrolled in two courses of any level for credit/letter grade, or one course at the 800-level for credit/letter grade. Graduate students who are fulltime students are charged full tuition. The office of the deans must approve any exceptions.

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A Note about PhD Education:
Degree-Seeking Graduate Students, WSE

All WSE Graduate Students enrolled in Homewood-based full-time programs must be enrolled in at least 9 credits to maintain full-time status in each fall and spring semester. Most graduate students enrolled in research-oriented degree programs (M.A., M.S., M.S.E., Ph.D. etc.) in Engineering are full-time students. However, part-time study consistent with residency requirements is common in many engineering departments. Students should consult with individual departments to determine the requirements for part-time study.

- Typically, full-time WSE Ph.D. students will be enrolled in a combination of WSE classes and/or research for a total of at least 20 WSE credits each fall and spring semester.
- Typically, full-time WSE Masters students will be enrolled in a combination of classes and/or research for a total of at least 9-10 credits each fall and spring semester.

Visit http://homewoodgrad.jhu.edu/academics/wse-graduate-credit-hours/ for more information and for Frequently Asked Questions.

Visiting (Not Degree-Seeking) Students

In some cases, graduate students from other institutions may participate in a visitation or residency at the Homewood Campus. These students are designated as “Visiting.” Although not candidates for a Johns Hopkins advanced degree, visiting graduate students (those not candidates for a Johns Hopkins graduate degree) may be enrolled on a full- or part-time basis with the approval of the chair of the department and the dean of their respective school. Visiting graduate students will be limited to two consecutive terms of either full- or part-time study.

There are two categories of non-degree (visiting) graduate students: (1) visiting graduate student (primarily taking courses), and (2) visiting graduate scholar (primarily pursuing research). Both categories must apply through their intended program of study and through the online application: http://grad.jhu.edu/apply/visiting-students/.

All non-degree visiting graduate students/visiting graduate scholars must register in every semester that they are here for the visiting student course (AS/EN 990.890 'Graduate Research Practicum'); there is no tuition charge for this course. Failure to register may result in the student’s removal from payroll, loss of health insurance, visa compliance issues, and/or lapses in university services/access.


Part-Time Graduate Students (in a fulltime, Homewood-based graduate programs)

New Homewood graduate students starting their full-time program in a part-time status are extremely rare, and are only allowed when the chair of a department or the director of a degree program makes a qualified written request to, and receives approval from, their cognizant Dean’s Office of Academic Affairs. Students already matriculated in their degree program who wish to change to a part-time status after completing at least one semester of full-time study may ask for permission of their program, and the Office of International Services (OIS), when applicable, to change status. Students will generally not be eligible to switch to part-time status if they are working primarily on the Homewood campus or working full-time on research for their degree. Part-time graduate students must still meet their degree residency requirements before they receive an advanced degree (WSE need to have two full-time resident semesters, KSAS and WSE PhDs, and KSAS Master’s need to have two consecutive full-time resident semesters).

Part-time has two major components: (1) a student cannot be part-time without prior approval from their department, and from OIS (when applicable), and (2) a part-time student cannot take more than 2 classes in a semester, or they will be automatically put back to full-time status (note that for WSE graduate students, part-time is any credit load below 9 credits (not including 9 credits)).

Costs:

- Part-time tuition charges are by the course in KSAS.
- WSE graduate students who are part-time in a full-time program are charged a minimum tuition fee up to 3 credits. Any additional credits taken by a WSE graduate student who is part-time in a full-time program will be charged by the credit.

For current tuition information, visit Homewood Student Accounts at https://studentaffairs.jhu.edu/student-accounts/tuition-fees/.

Health Benefits: students in KSAS and WSE full-time programs who are in a part-time status are automatically enrolled in student health benefits, and may be responsible for assessed premium(s). Visit https://studentaffairs.jhu.edu/registrar/students/student-health-benefits/ for more information.

Payroll: Generally, students who are part-time cannot be on student payroll. There may be exceptions for final semester international students in certain circumstances. Please consult with the Office of Student Employment Services (http://studentaffairs.jhu.edu/studentemployment) for more information.

International students: Visa-holders (F-1, J-1, etc.) wishing to change their enrollment status to part-time must first meet with OIS to determine eligibility. There are two separate steps to switch an international to part-time status: (1) the student must secure permission from OIS to apply for part-time status (this is a USCIS form, and not an university registration/enrollment form), and (2) the student needs to make sure their department has contacted the registrar’s office on their behalf to make the official switch to part-time status. International students cannot switch to part-time without completing both steps. International students cannot be part-time unless they are in their final semester of their degree program.

Combined Bachelor’s/Master’s Students

The term ‘Combined Bachelor’s/Master’s Student’ can be misleading. This status is reserved only for JHU undergraduate students who have been accepted concurrently into a WSE or KSAS Homewood-based fulltime graduate program while still completing their undergraduate requirements. Most Combined Bachelor’s/Master’s undergraduate students will have to switch to graduate status to complete degree requirements. In order for a student’s status to change from undergraduate to graduate, a Change of Classification Form for Combined Students must be completed. For students whose status change is due to completion of eight semesters of full-time undergraduate student at JHU (or the equivalent for transfer students), it is the responsibility of the Academic Staff in the student’s chosen graduate program to sign the form and forward it to the Office of the Registrar. For students whose status change is due to completion of undergraduate degree requirements prior to the eighth semester of full-time undergraduate study at JHU (or the equivalent for transfer students), it is the responsibility of the Academic Staff in the student’s
undergraduate program to sign the form first. It then goes to the student’s graduate program before it is received by the Office of the Registrar.

Visit the Combined Bachelor’s/Master’s degree (http://engineering.jhu.edu/academics/combined-bachelors-masters) website for more information.

Postdoctoral Fellow Appointments

Postdoctoral fellows are at the university to undertake a research program in cooperation with a member of the faculty. All appointments are arranged through the individual departments. Proof of successful PhD completion and eligibility for employment will be required before any appointment may begin.

Visit http://postdoc.jhu.edu/ for more information.

Residency Requirements

Every full-time WSE Master’s student must register as a full-time Resident graduate student for at least two semesters or satisfy an equivalent requirement approved by the appropriate department. (Combined bachelor’s-master’s degree students are exempt, as are those who enter a WSE master’s degree program after two or fewer semesters following completion of a JHU undergraduate degree.)

Every full-time KSAS Master’s student must register for a minimum of two consecutive semesters as a full-time, Resident graduate student.

Every full-time PhD Student (WSE and KSAS) must register for a minimum of two consecutive semesters as a full-time, Resident graduate student.

Graduate Study Abroad (KSAS only)

The status of Graduate Study Abroad is usually limited to those students in the departments of Anthropology, Comparative Thought and Literature, and German & Romance Languages and Literatures, who are required as a part of their regular degree program to complete a semester or more of full-time study at a foreign university. While in the case of the History of Art Department study abroad is not a general requirement, many of its graduate students do go abroad to conduct dissertation research. The category of Graduate Study Abroad is considered a full-time status. The use of this category for situations other than those noted above requires the approval of your department chair of the Homewood Graduate Board. A student on Graduate Study Abroad is required to pay 10% of the full-time tuition rate for each semester abroad. The KSAS Dean’s Office will pay the remaining 90% tuition balance.

Students who are enrolled in the Student Health Benefits Plan are encouraged to contact Consolidated Health Plans (CHP) or the Registrar’s Office prior to leaving campus for coverage details while abroad. Graduate Study Abroad students should discuss all plans with their department/advisor in advance. Additionally, international students should always consult with OIS before making any travel plans or status changes. You may reach CHP at (877)657-5044.

The Graduate Study Abroad Application is available here.

Nonresident Status

Nonresident (NR) status is a full-time status typically reserved for students who have completed all required course work and exams (Internal and GBO, as per degree requirements), and are working on their thesis or dissertation. The nonresident student’s advisor/department is not obligated to cover the cost of tuition nor of the University’s health benefits for Nonresident students. Nonresident students who are enrolled in JHU’s health benefits are responsible for paying the premiums themselves if there is no available support from the student’s department/advisor.

Eligibility

KSAS graduate students may be eligible for Nonresident Status if they:

• Have completed all coursework and requirements for the graduate degree other than the presentation and defense of the master’s essay or doctoral dissertation
• Have reached the end of their departmental support period or have exhausted support from grants and cannot be fully supported by the department.
• Work 19.9 hours per week or fewer during the academic year if employed by Johns Hopkins University in any capacity (intersession or summer employment can be full-time, however). If working, students must be on salary (not stipend) and paid hourly. NOTE: Research or teaching assistants expected to work more than 19.9 hours per week do not qualify for Nonresident status.

WSE full-time program PhD and Master’s Students are generally only eligible to apply for one of the three WSE PhD/Master’s Nonresident Statuses if they have no outstanding coursework (defined as either assignments/tests required for a class in which a student is currently enrolled or coursework in progress towards resolving an Incomplete grade) or exams (internal and preliminary GBOs for example) to complete.

Note that nonresidency is a full-time status intended for students who are primarily not on campus.

• NR WSE PhD/Master’s dissertation/thesis/capstone/project completion: Student is very nearly finished—just has some writing up to do and defend—but needs to leave campus to start work. Expectation is one semester, but two may be allowed. Student pays the NR tuition, and typically receives no stipend or health benefits support.
• NR WSE PhD/Master’s study away: Student (with or without advisor) has the opportunity to be actively engaged in PhD work but at a non-JHU facility. Student remains fully supported by PI/department/host facility (NR tuition, stipend, health benefits support provided for student).
• NR WSE PhD/Master’s internship/co-op: Student voluntarily takes time to pursue other pursuits that may be only tangentially relevant to their degree. The expectation is that they will return to campus in a residential capacity to complete their degree. Student typically pays NR tuition, receives no stipend or health benefits support. Time in this status is typically one year, but can be renewed for a second year.

Students who are enrolled in University Student Health Benefits are encouraged to contact the Registrar’s Office prior to entering into a NR status. Graduate Study Away students should discuss all plans with their department/advisor in advance. Additionally, international students should always consult with OIS before making any travel plans or status changes. The Nonresident PhD/Masters Study Away Application is available here (http://homewoodgrad.jhu.edu/academics/graduate-board/policies-and-forms).
Tuition
Students on Nonresident status are charged 10% of full-time tuition per semester.

Restrictions
Nonresident students are permitted access to campus, faculty advising and JHU services, however, they are not permitted to enroll in courses, with these three exceptions: (1) international students who file for Curricular Practical Training F1 (CPT1) through the OIS may register for a course entitled “Research and Teaching Practicum” (KSAS) or “Engineering Research Practicum” (WSE), and/or (2) enrollment in EN.500.603 Academic Ethics, and/or (3) enrollment in AS.360.625 Responsible Conduct of Research. Exceptions 2 and 3 are granted by the student’s respective Office of Graduate Academic Affairs.

While in Nonresident Status, students are required to online enroll in AS/EN.910.600 Non-Resident Status for each semester.

The maximum amount of time that a student may retain Nonresident Status is four semesters for KSAS master’s students and ten semesters for KSAS doctoral students, and 1-2 semesters for WSE doctoral and master’s students (see WSE-specific nonresident statuses for PhDs and Master’s students above). Upon reaching this limit, the student will be required to register for either part-time status (WSE only, as appropriate) or full-time Resident status until degree completion.

Application Procedures
Students are required to complete and sign an Application for Nonresident Status indicating that they meet the requirements as stated above. The form should be signed by the department, the OIS (if applicable), and either the WSE Vice Dean for Education (or WSE designee), or the KSAS Vice Dean for Graduate Education (or KSAS designee).

Students should apply for Nonresident status well in advance of the first semester for which it is desired. Deadlines are posted here (http://homewoodgrad.jhu.edu/academics/graduate-board/policies-and-forms).

When requesting a change of status for the current term, such petitions should be submitted no later than the end of the second week of the semester.

Leave of Absence
A Leave of Absence (LOA) is an approved absence from the University during which time students are not charged tuition nor are they required to register. Time spent on an LOA is regarded as an approved break in study and is not counted toward the total time-to-degree. If a student fails to register without obtaining an approved LOA the student will be considered withdrawn from their degree program.

Students are encouraged to contact the Registrar’s Office prior to applying for an LOA for details regarding health benefits while on LOA.

International students must contact OIS before filing for LOA.

Eligibility
All KSAS and WSE full-time and part-time program graduate students are eligible for LOA if one of the following conditions prevents them from continuing with their graduate studies:

• A documented physical or mental medical condition.
• Compulsory military service.
• Personal or immediate family hardship.

• NOTE: Financial difficulty alone is not a valid reason for requesting an LOA.

LOA Tuition and Financial Support
Students on LOA are not charged tuition for the semesters they are granted the leave; the period of leave is simply regarded as an approved interruption of the degree program; however, the University cannot guarantee that financial support will be available when students resume their studies. After taking an LOA, students must re-apply for tuition assistance, research assistantships, fellowships and/or teaching assistantships. Such matters are left to the discretion of the department. Before applying for a LOA, students should consult their department for information regarding funding opportunities upon return from LOA.

LOA Restrictions
Graduate students may apply up to four semesters of LOA (summer terms are not counted) when medical conditions, compulsory military service, or personal or family hardship prevents them from continuing their graduate studies.

Continued approval is based on the reason(s) for the request. Additional information may be requested by the department, or either the WSE Vice Dean for Graduate Education (or WSE designee), or the KSAS Vice Dean for Graduate Education, Centers and Programs (or KSAS designee).

Students on LOA are not permitted to use any University student services and/or facilities (e.g., computing labs, library, labs, athletic facilities, etc.) and may not be enrolled at another University.

Students on LOA who wish to continue working at Johns Hopkins are not eligible to be paid through the Student Payroll Office and must therefore be hired through the appropriate divisional Human Resources Department.

No progress toward degree completion or coursework can be made while on LOA.

Students on LOA do not have access to student health benefits. The only exception is for a student on a MLOA (medical leave of absence). Students should consult with their cognizant Dean’s Office of Academic Affairs (Renee Eastwood, KSAS; Christine Kavanagh, WSE) for more information.

Application Procedures
To be granted LOA status, students are required to complete and sign a LOA Application form and provide a letter stating the reason for their application. The form must be signed by the student’s department, the OIS (if applicable), and either the WSE Vice Dean for Graduate Education (or WSE designee), or the KSAS Vice Dean for Graduate Education, Centers and Programs (or KSAS designee).

Students wishing to return from an LOA must complete an Application to Return from LOA form (http://homewoodgrad.jhu.edu/academics/graduate-board/policies-and-forms). Application deadlines are posted here (http://homewoodgrad.jhu.edu/academics/graduate-board/policies-and-forms).

The departure of a student from one of the Homewood Schools without prior arrangement of Nonresident status or Leave of Absence status will be deemed a permanent withdrawal from the student’s program. Students who withdraw from their program must be formally readmitted, at the discretion of the department, before they may return to the University. If readmitted, they do not pay a second application fee,
but must satisfy the residency requirement for the degree following readmission (even if previously satisfied), and pay all outstanding fees.

**Special Note: LOAs and Academic Probation**

If a student needs to take a LOA while they are on an Academic Probation, their probation is paused for the duration of the approved LOA period. Upon the student’s return from LOA, their probation is reactivated with the same terms, but the clock for the probation is reset from the date of return to the longer of (1) the minimum time period dictated by the policy for the appropriate category as noted on the student’s original probation letter (such as research, coursework, etc.), or (2) the remainder of the student’s probationary period as noted in the student’s original probation letter.

**Satisfactory Progress**

**Homewoood Schools Graduate Student Academic Review Policy**

This policy applies to all full-time WSE and KSAS doctoral students and master’s students conducting thesis research. Each graduate program is required to publish its own policies and standards with respect to academic standing. At the end of each semester, all full-time Homewood graduate programs are expected to review the academic records of their graduate students to evaluate academic progress.

Once per academic year, all full-time Homewood graduate programs are required to provide a written review to all doctoral students, and to all master's students conducting thesis research.

Departments should include mention of funding continuation, as appropriate; as well as include a substantive discussion about the student’s professional development goals and ways to develop strategies to achieve those goals. This review must include the opportunity for the student to offer self-evaluation.

WSE has established a Guide to Effective Annual Reviews ([https://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/#accordion-panel-10](https://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/#accordion-panel-10)) to assist both advisors and students make these annual reviews a useful tool in the development of each student.

Students who fail to attain a program’s minimum level of performance may be placed on academic probation or dismissed using the procedures outlined in the Homewood Schools Policy for Graduate Student Probation, Dismissal, and Funding Withdrawal. In making these decisions, particularly that of dismissal, the program will take into consideration extenuating circumstances beyond the student’s control.

**Probation/Dismissal/Withdrawal**

**Academic Probation**

Whenever it is determined that a graduate student has failed to meet minimum academic, research, and/or TA requirements, that student may be placed on academic probation. This change in status requires a formal letter and a meeting between the student and either his/her faculty advisor, chair, and/or departmental director of graduate studies. The letter should clearly outline the student’s academic shortcomings, indicate the corrective measures necessary to remain in the program and state the length of the student’s probationary period. Any funding ramifications for the student should be included as well. Following the conclusion of the stated probationary period, the program must inform the student of his/her status based upon whether the student has met the requirements as stated in the probation letter.

Typical probation outcomes include:

1. removal of the student from probation
2. extension of the probationary period, or
3. dismissal of the student.

While on probation, students maintain their active, enrolled student status and are expected to continue in their obligations, courses, and research, as appropriate. Whatever funding support in place at the start of probation (if any) remains in place during the probation period.

Please see the full policy ([http://homewoodgrad.jhu.edu/wp-content/uploads/sites/35/2014/08/Graduate-Student-Probation-Funding-Withdrawal-and-Dismissal-Policy.pdf](http://homewoodgrad.jhu.edu/wp-content/uploads/sites/35/2014/08/Graduate-Student-Probation-Funding-Withdrawal-and-Dismissal-Policy.pdf)) for more information on process, appeals, etc.

**Academic Dismissal**

**Dismissal After Probation**

This must be done with a formal letter citing the reason for dismissal and requires a meeting between the student and his/her faculty advisor or the departmental director of graduate studies. Academic dismissal will be noted on the student’s transcript at the request of the program and with the approval of the cognizant Dean. A student may appeal this decision.

**Dismissal Without Probation**

A student may be dismissed without a formal probation period under three circumstances:

1. if he/she meets the conditions for dismissal based on coursework as stated by the academic program in its department handbook or on its website;
2. if he/she fails an oral or written examination for which successful completion is necessary to continue in the program (as stated in the program’s degree requirements), or if he/she fails to meet any condition resulting from a qualifying or GBO exam; or
3. if he/she is found to have committed academic or research misconduct and expulsion is the outcome of the deliberations as outlined in the Homewood Graduate Academic Misconduct Policy ([http://homewoodgrad.jhu.edu/wp-content/uploads/sites/35/2018/06/Homewood-WSE_KSAS_and-WSE-EP-Graduate-Academic-Misconduct-Policy-2018.pdf](http://homewoodgrad.jhu.edu/wp-content/uploads/sites/35/2018/06/Homewood-WSE_KSAS_and-WSE-EP-Graduate-Academic-Misconduct-Policy-2018.pdf)) or the University Research Integrity Policy ([https://www.jhu.edu/assets/uploads/2017/08/university_research_integrity_policy.pdf](https://www.jhu.edu/assets/uploads/2017/08/university_research_integrity_policy.pdf)). Under these circumstances, programs are expected to follow the same procedures for Dismissal After Probation. In addition, students are also subject to immediate dismissal on non-academic grounds in accordance with the Johns Hopkins Student Conduct Code ([https://studentaffairs.jhu.edu/policies-guidelines/student-code](https://studentaffairs.jhu.edu/policies-guidelines/student-code)) as well as all applicable policies at the university policies page ([https://www.jhu.edu/university-policies](https://www.jhu.edu/university-policies)).

**Academic Dismissal Consequences**

When a student is dismissed from the University, several consequences follow:

- The Office of the Registrar cancels the student's registration for the next semester and authorizes a reversal of tuition assessed for that semester. Note: this doesn't necessarily mean that the student receives a refund. For example, if the student has been funded by the department, the department would be eligible for the refunded funds. Also, any refund amount is subject to the refund schedule published by Student Accounts.
- Notation of dismissal may be placed on the student’s transcript at the request of the program and with the approval of the cognizant Dean.
- The Office of Student Financial Services suspends financial aid to the student and work-study aid.
- The Office of International Services performs duties as required by U.S. federal regulations regarding persons not eligible to study at the University.
- Eligibility for student health benefits will end. Please contact the Registrar’s Office for specific information.
- The Student loses access to university services, property, and nonpublic spaces.

Readmission Following Dismissal
The terms for readmitting a student who has been dismissed for academic reasons are established by individual departments. The readmission process should be described in the dismissal letter, if deemed appropriate. Students who have been dismissed should discuss the readmission process with their advisor. Procedural instructions for this policy can be found at http://homewoodgrad.jhu.edu/academics/policies/. The terms for readmitting a student who has been dismissed for reasons other than academic/research/TA performance are decided by the student's cognizant Dean's Office of Academic Affairs.

Voluntary Withdrawal
Students wishing to withdraw from the University must file written notice with their Department. A Termination/Withdrawal Form (http://homewoodgrad.jhu.edu/academics/graduate-board/policies-and-forms) must be generated by the departmental academic staff. Graduate students are encouraged to consult the chair of their department prior to submitting their written notice. Students who withdraw from their program must be formally readmitted, at the discretion of the department, before they may return to the university. If readmitted, they do not pay a second application fee, but must satisfy the residency requirement for the degree following readmission (even if previously satisfied), and pay all outstanding fees. Once a student withdraws from the University, their student transcript is closed – changes to their academic record will not be permitted. International students must consult with OIS to ascertain their visa obligations before withdrawing from the university. The same ramifications as listed under ‘Academic Dismissal Consequences’ apply.

Withdrawal by Lack of Registration
Students who are not registered by the end of the fourth week of a given semester and either (1) have not responded to correspondence from their department, advisor, Office of Academic Affairs, and/or Homewood Registrar’s Office about their intention to remain in the program, OR (2) have responded to correspondence but have made no effort to maintain a valid student status (defined as either enrolled or on an approved leave of absence), will have been deemed to have withdrawn themselves from the university and will be processed as a Withdrawn student in the student system (SIS). It is important to note that paying tuition is not the same as registering for classes. For more information, please see the Student Enrollment Statuses tab under Academic Policies.

Withdrawal Consequences
Any outstanding fees will be followed up with the student/their department by the Office of Student Accounts. Students who withdraw from their program must be formally readmitted, at the discretion of the department, before they may return to the university. If readmitted, they do not pay a second application fee, but must satisfy the residency requirement for the degree following readmission (even if previously satisfied), and pay all outstanding fees. Once a student withdraws from the University, their student transcript is closed — changes to their academic record will not be permitted. International students must consult with OIS to ascertain their visa obligations before withdrawing from the university. The same ramifications as listed under ‘Academic Dismissal Consequences’ apply.

THE BELOW POLICIES APPLY TO BOTH CONTINUING AND NEW STUDENTS, UNLESS NOTED SPECIFICALLY OTHERWISE

Registration
All students must register at the beginning of each term in accordance with instruction issued by the registrar before they can attend classes or use university facilities. Detailed instructions about registration will be provided to all students before the registration period each term. If the student has not been notified at least two weeks before the start of classes for any fall or spring term, the Registrar’s Office should be contacted immediately.

Students who for any reason do not complete their registration until after the prescribed registration period are required to pay a late registration service fee. The late registration fee schedule is posted every semester on the registrar’s website under Term Dates & Deadlines. Graduate students must obtain permission from the chair of their department to register after the second week of classes.

Visit https://studentaffairs.jhu.edu/registrar/students/graduate-registration/ for more information.

Students will not be allowed to register if there are unpaid bills from a previous term. The student is required to pay tuition or make financial arrangements with the Student Accounts Office before registering for a given term.

Withdrawal by Lack of Registration
Students who are not registered by the end of the fourth week of a given semester and either (1) have not responded to correspondence from their department, advisor, Office of Academic Affairs, and/or Homewood Registrar’s Office about their intention to remain in the program, OR (2) have responded to correspondence but have made no effort to maintain a valid student status (defined as either enrolled or on an approved leave of absence), will have been deemed to have withdrawn themselves from the university and will be processed as a Withdrawn student in the student system (SIS). It is important to note that paying tuition is not the same as registering for classes. For more information, please see the Student Enrollment Statuses tab under Academic Policies.

Grades
Grading basis for graduate courses deliberately includes both letter grades and P/F grades. Instructors should have the widest discretion possible in grading graduate students' work; therefore both grading bases are available to the instructor for courses at the graduate level. While policies in most departments vary, most graduate students receive letter grades or Pass/Fail grades for their coursework. Students should consult their department chairs and instructors to determine their grading requirements.

Registrar deadlines and policies concerning grade changes are as follows:

Letter Grades (A through F)
Changing letter grades of "A" through "F" to a "Passing" grade is not permissible at any time.

All other grade change requests (e.g., "B" to "A") are acceptable only within one year of semester end date. Change requests beyond one year can only be changed as a result of clerical error, and must be
accompanied by a written explanation/justification from the course instructor.

Incomplete Grades (I)
Students who are confronted with compelling circumstances beyond their control that interfere with the ability to complete their semester’s work during the normal course of a term may request an incomplete grade from the instructor. Approval of such a request is neither automatic nor guaranteed. Procrastination or distraction by other pursuits are not regarded as compelling circumstances, and extensions in these situations are unfair to students who have completed their course requirements within the allotted time.

Students who are in good academic standing have until the end of the third week of the next semester to finish incomplete work. Exceptions to this deadline require a petition from the instructor, and appeal to the student’s respective graduate affairs office before the end of the third week of the following semester. When appealing to change the deadline, faculty members must specify a new date for completion of the work which must be before the end of the current semester. Incomplete grades cannot typically be held over into a third semester in order to complete the missing work, nor can incomplete grades be resolved by retaking the course.

Special Rules for Graduating Students
Students with incomplete grades in required courses at the date of degree conferral will not graduate. Students with incomplete grades in courses that are not required for degree completion may still graduate. However, the deadline for completion is abbreviated; students must resolve incomplete grades within 30 days after the date of degree conferral which is when the university closes their graduate record.

Dropping a course with an “Incomplete” grade is not permissible at any time.

Changing an “Incomplete” grade to a final grade (“A” through “F”, “Pass”) may be done by the instructor if during the designated timeframe. After that deadline passes, grade change requests must be sent via a grade change form to the student’s cognizant Dean’s Office of Graduate Academic Affairs (Renee Eastwood, KSAS/Christine Kavanagh, WSE) for review and approval.

In-Progress Grades (IP)
Reserved for classes in which it is expected that the assigned work will require more that one semester to be completed, but the class itself will meet for only one semester, such as graduate seminar courses.

Dropping a course with an “In-Progress” grade is permissible only with the approval of the instructor, and the Dean’s Office.

Changing an “In-Progress” grade to a final grade (“A” through “F”, “Pass”) is acceptable at any time before the student’s departure from the university, and requires the instructor’s approval.

Missing Grades (MR, X)
A “Missing” grade (denoted by an “MR” or an “X” on the transcript) appears if the instructor has not submitted a grade within the defined grading period for the semester.

An instructor may submit a Grade Change form directly to the Office of the Registrar to change a “MR” or “X” grade to a final grade.

Dropping a course with a “MR” or “X” grade is not permissible at any time.

Changing a course with a “MR” or “X” grade to “Audit” is not permissible at any time.

Audit (AU)
When a graduate student enrolls in a course with “Audit” status, he/she must reach an understanding with the instructor as to what is required to earn the “Audit” grade notation. If the student does not meet those expectations (e.g., fails to attend class), the instructor must notify the Registrar’s Office in order for the student to be retroactively dropped from the course. Dropped coursework does not appear on the student’s transcript.

Changing a course registration from “Audit” (student receives no letter grade) to “Credit” (student receives letter grade), or from “Credit” to “Audit” is permissible during the Office of the Registrar’s official deadlines for each semester. Registration changes beyond this deadline are not permissible.

Changing a final grade (“A” through “F”, “Pass”, “I”, “IP”, “MR”, or “X”) to “Audit” is not permissible at any time.

The following ASEN Graduate Courses cannot be taken for AU (Audit):
- Graduate Research
- Dissertation Research
- Master’s Thesis
- Master’s Essay
- Independent Study

These courses can only be taken as P/F or for a letter grade, at the instructor’s purview.

Add/Drop
Prior to the beginning of classes: Returning graduate students may make changes to their registration in-person or online through the SIS system. The SIS system is available for use up to ten weeks prior to the first day of classes.

First four weeks of classes: Graduate students may add classes online (as long as the electronic Advisor Hold has been released) or in-person at the Office of the Registrar. All in-person adds must have a signature from the faculty advisor or department chair.

First six weeks of classes: Graduate students may drop classes online (as long as the electronic Advisor Hold has been released) or in-person at the Office of the Registrar. All in-person drops must have a signature from the faculty advisor or department chair. Any drops within the first six weeks of classes will not be noted on the transcript.

Note: the instructor’s signature must be included on any course add form submitted past the 4 week add deadline and/or past the 6 week drop deadline. Detailed instructions for how to add or drop classes online are available on the Registrar’s website. A calendar with specific dates for adding/dropping courses is also available on their website.

Beginning with week seven of classes: Graduate students have until the end of week eleven to withdraw from a course with the signatures of: (1) course instructor, and (2) department chair, and (3) the student's respective Dean's Office personnel (either the Assistant Dean for Graduate and Postdoctoral Academic Affairs for Whiting School of Engineering or the Director of Graduate and Postdoctoral Academic
Affairs in the Krieger School of Arts and Sciences). All withdrawals will be noted with a “W” on the student’s transcript.

**Registration Holds**

A registration hold will be placed for students who have not obtained clearance from the Office of International Services, Student Accounts, Student Health Insurance or Student Health and Wellness Offices. Students should meet with the office that placed the hold so that the hold can be removed. Students who have an advisor’s hold on their registration must have their advisor release the hold online.

**Transferring Courses**

**WSE Master’s degrees (M.A., M.S., M.S.E) and PhDs**

For WSE graduate students who earned an undergraduate degree outside of the Whiting School of Engineering or the Krieger School of Arts and Sciences, no coursework completed outside of Johns Hopkins University before the undergraduate degree was conferred can be applied to a WSE graduate degree, regardless of whether that course was applied to the undergraduate degree.

WSE graduate students may transfer in up to two graduate-level courses from another institution provided the coursework was completed after the undergraduate degree was conferred. The student must obtain approval from the WSE Master’s/PhD program faculty advisor to do so, and a transcript from any relevant academic institution must be included with conferral completion paperwork submitted to the Academic Affairs office. EXCEPTION: WSE master’s students in a department-approved study abroad program can transfer in additional coursework (i.e., beyond two courses), but in total, at least half of the courses/credits applied to the WSE master’s degree must be taken/earned at Johns Hopkins. Individual graduate programs reserve the right to enforce stricter policies.

**Double Counting Courses**

**WSE Master’s degrees (M.A., M.S., M.S.E) and PhDs**

The WSE has established the following policies on double-counting coursework for all students in the full-time (Homewood) programs. If an individual program adopts double-counting policies more strict than these, the program’s policies override the school-wide policies. Students are encouraged to refer to individual program policies.

**Bachelor’s Master’s Double Counting**

Coursework applied to a bachelor’s degree:

Students either in a WSE combined (bachelor’s/master’s) program or seeking a WSE master’s degree after having earned a WSE or KSAS bachelor’s degree may double-count two courses (400-level or higher) to both programs with the permission of the master’s faculty advisor. WSE master’s degree candidates may not double-count courses applied to a bachelor’s degree earned at a different institution. Individual graduate programs reserve the right to enforce stricter policies.

Coursework not applied to a bachelor’s degree:

For students who are either in a WSE combined bachelor’s/master’s degree program, or who have already earned a WSE or KSAS bachelor’s degree and are seeking a WSE master’s degree, any graduate-level coursework (as defined by the WSE graduate program) not applied to the undergraduate degree may be applied to the graduate degree, regardless of when that course was taken (i.e., before or after the undergraduate degree has been conferred) with the permission of the master’s faculty advisor.

For students who earned an undergraduate degree outside of the Whiting School of Engineering or the Krieger School of Arts and Sciences, no coursework completed outside of Johns Hopkins University before the undergraduate degree was conferred can be applied to a WSE master’s degree, regardless of whether that course was applied to the undergraduate degree.

**Master’s-Master’s Double Counting**

Coursework applied to a master’s degree:

Students pursuing (1) a WSE master’s and a master’s from any JHU school simultaneously, (2) a WSE master’s after having earned a master’s from any JHU school, or (3) a WSE master’s degree after having earned a master’s degree from another institution, may double-count either two semester-length courses or three quarter-length courses across two master’s programs, as long as the courses are equivalent to the 400-level or higher in WSE full-time graduate programs. The student must receive approval from both master’s degree program faculty advisors if both sets of degree requirements will be completed at the same time. For a student to double-count coursework from two master’s degrees whose requirements are met at different times, the student must obtain only the approval of the faculty advisor in the program to be finished second. Individual graduate programs reserve the right to enforce stricter policies.

**Declaration of Double-Counted Course**

WSE master’s students wishing to double-count courses must submit these courses to the WSE master’s program for approval. If it is learned that a student has double-counted a course for the WSE master’s degree without permission of the WSE master’s program, this program reserves the right to revoke the degree.

**Double-Counting Across Three or More Programs**

With bachelor’s-master’s and master’s-master’s double-counting, across any number of degree programs, a student can reduce the number of master’s courses required by up to two (with the approval of each of the programs involved). Beyond that, the remaining courses must be unique to the degree program. For example: with a ten-course master’s degree program, eight of those courses must be unique to the program, and not applied to a different degree at any level. A student can double-count any number of undergraduate courses to the various master’s degrees (but at most, two to each master’s program) and he/she can double-count the same course across any number of degrees pursued (again, with the approval of the programs involved).

**Research and Scientific Writing Courses**

Through the Center for Leadership Education graduate students may enroll in writing courses designed to assist with dissertation and grant writing. Students may enroll for this course at no additional charge. The course is offered in the fall and spring semesters however, space is limited. For additional information go to https://engineering.jhu.edu/cle/.

**Transcripts**

Transcripts may be requested from the Registrar’s Office. A request for one copy is normally processed within one to three business days of receipt of the request. Requests for multiple transcripts require additional processing time. Standard delivery of transcripts is by U.S. Mail first-class. Visit https://studentaffairs.jhu.edu/registrar/students/transcripts/ for information on ordering transcripts. Partial transcripts of a student’s record will not be issued.

Transcripts are normally issued only at the request of the student or with his/her consent. However, transcripts may be issued to offices and departments within the university without consent of the student. Official and/or unofficial transcripts of work at other institutions that the student has presented for admission or evaluation of credit become the property of the university and cannot be copied or reissued. If a transcript
of this work is needed, the student must get it directly from the issuing institution.

Summer and Intersession Courses
Summer Courses: While most summer courses offered at the Homewood Campus are undergraduate level courses, graduate students may enroll in these courses with permission from their department chair and the course instructor. No financial assistance is available for graduate students who wish to take summer courses. In special cases, graduate students may also take courses at other divisions of the institution. Visit https://studentaffairs.jhu.edu/registrar/students/interdivisional-registration/, or contact the Registrar’s Office, for more information.

Graduate students may register for the course Summer Independent Research (990.892) with the approval of their department chair. There is no charge for this course as independent research projects conducted during the summer are not graded and carry no academic weight. An NG ("no grade given") will appear on the student’s transcript.

Intersession Courses: Graduate students are also eligible to enroll in Intersession coursework. Grades are generally given on an A-F scale. Some students use this period to participate in research, independent study, or internships. A list of Intersession offerings is published in late November or early December. A special form, available in the Registrar’s Office, is used for Intersession registration. Students should register before winter break. Students who register for research, independent study, or an internship during Intersession must have the approval signature of their faculty sponsor and academic advising office. This opportunity is offered tuition-free. Visit https://summerprograms.jhu.edu/program/intersession-program/ for more information.

Course Re-Take Policy
At the discretion of the Homewood graduate program, a graduate student may retake a course, but the grade from the initial effort will remain on the transcript. This applies whether the initial effort occurred while the student was an undergraduate student or a graduate student.

THE BELOW POLICIES APPLY TO BOTH CONTINUING AND NEW STUDENTS, UNLESS NOTED SPECIFICALLY OTHERWISE

Graduate Degree Academic Requirements
Doctor of Philosophy (KSAS and WSE)
In addition to any departmental/divisional PhD requirements, PhD students must meet the following to be considered eligible to apply for graduation:

- A minimum of two consecutive semesters as a full-time, resident graduate student.
- Completion of registration in the semester during which degree requirements are met (note: students completing in a Summer term generally should have been registered for the summer graduate research course, but it is allowable if the last official semester of registration is the Spring semester immediately prior to degree conferral).
- Certification by a department or program committee that all school, departmental, program, and/or committee requirements have been fulfilled.
- A dissertation approved by at least two referees appointed by the department or program committee, and submitted to the Commercial Binding Office.
- Successful completion of a Graduate Board Oral (GBO) examination as determined by the department or program committee. This is classified as either a preliminary or a final examination.
- Though time-to-degree is determined by the department, and may not exceed 12 years, continuation in the program will be based/contingent upon satisfactory academic progress after eight years of enrollment.

PhD Advisor Policy
All PhD students conducting research and/or in the writing phase of their degree program must have a research advisor to remain in good standing with their academic and research progress.

Visit https://e-nextcatalog.jhu.edu/grad-students/graduate-specific-policies/ for more information.

KSASMaster’s Degrees (M.A., M.F.A., M.S.)
- A minimum of two consecutive semesters as a full-time, resident graduate student.
- Completion of registration in the semester during which requirements are met.
- Certification by a department or program committee that all requirements have been fulfilled.
- A thesis approved by at least one referee and submitted to the Commercial Binding Office when the department requires a thesis.
- Meets the requirements of the school’s time-to-degree policy.
(http://homewoodgrad.jhu.edu/academics/graduate-board/degreerequirements)

WSE Master’s Degrees (M.A., M.S., M.S.E., M.S.E.M.)
- Every student must register as a full-time graduate student for at least two semesters or satisfy an equivalent requirement approved by the appropriate department. (Combined bachelor’s-master’s degree students are exempt, as are those who enter a WSE master’s degree program after two or fewer semesters following completion of a JHU undergraduate degree.)
- Every student must be registered in the semester during which degree requirements are met; this includes students who have no courses remaining in which to enroll but must resolve coursework for which an “Incomplete” grade was assigned.
- Every student must provide certification by a department or program committee that all departmental or committee requirements have been fulfilled.
- If the student is submitting a formal essay to the MSE Library to help complete master’s degree requirements, the essay must be approved by at least one reader. (See the Homewood Academic Council Faculty Status table, under “Thesis Supervision of Graduate Students,” to determine who may serve as the reader/advisor. Additional readers, if required by program, need only program approval.)
- All courses applied to the master’s degree must be at the 400-level or higher. At their discretion, individual graduate programs may institute a higher course level as the minimum for their own students.
- Every student must earn the master’s degree within five consecutive academic years (10 semesters). Only semesters during which a student has a university-approved leave of absence are exempt from the 10-semester limit; otherwise, all semesters from the beginning of the student’s graduate studies—whether the student is resident or not—count toward the 10-semester limit.
• Every student must complete training on academic ethics (EN.500.603).

• Every student must complete training on the responsible and ethical conduct of research, if applicable. (Please see the WSE Policy on the Responsible Conduct of Research [https://engineering.jhu.edu/wse-research/resources-policies-forms/responsible-conduct-of-research].)

**Time to Degree (TTD)**

The time-to-degree (TTD) limit for degree candidates is typically determined by a specific program. However, Johns Hopkins University’s general policy requires that TTD not exceed twelve years for Ph.D. candidates, and five years for WSE and KSAS terminal master’s candidates. The TTD count begins with the first semester of registration as a matriculated student. Time spent on an approved LOA will not be counted toward the graduate student’s TTD. Students unable to complete degree requirements within the required time limit are required to withdraw from the University. Full TTD policies for WSE and KSAS can be found at [http://homewoodgrad.jhu.edu/academics/graduate-board/new-grad-board-residency-page/](http://homewoodgrad.jhu.edu/academics/graduate-board/new-grad-board-residency-page/).

**Co-tutelle de Thèse**

It is the University’s current policy that Johns Hopkins will recognize dissertation research and subsequent dissertation submission for the purposes of a degree from Johns Hopkins alone. It will sign no agreement that supports the concept of a student submitting the same work to different universities to receive two distinct degrees.

The University, however, wants to promote international exchange and in this spirit the Graduate Board has agreed to accommodate students with a desire to include faculty from a foreign university to participate in their research and defense process. Upon submission and review of a current curriculum vitae, the Graduate Board will allow one advisor to be a faculty member of a foreign university and in certain cases will allow the committee to be expanded to include other faculty from a foreign university as long as the majority represent Johns Hopkins. The university will provide no funds to cover expenses. Funding for travel would be up to the department or the foreign university.

All proposed co-tutelle agreements are to be submitted to the Graduate Board for review.

**Application for Graduation**

All graduate students must submit an Application to Graduate online through their SIS account in order to generate degree conferral and receive a diploma. Students should consult with their Graduate Coordinator, the Homewood Graduate Board’s website, and the WSE Office of Academic Affairs’ website respectively to determine current deadlines. The dates of these deadlines change each academic year.

In addition to submitting the general application to graduate, engineering students preparing to graduate from a master’s or doctoral program must complete paperwork indicating the courses they intend to apply to their degree. This paperwork is distributed by each department’s Graduate Coordinator and once completed should be returned to them.

**Completing Graduation Requirements**

Departmental graduation requirements vary; therefore, students are encouraged to speak with their departmental administrator to learn details of their requirements.

**Degree Completion Deadlines and Information**

The Graduate Board and the WSE Office of Academic Affairs (for WSE master’s students) issues deadlines for submission of theses and essays in the spring semester for the following academic year. These deadlines must be met for a student to be listed as a degree candidate. Students can access the calendar of deadlines on the Homewood Graduate Board’s website ([http://homewoodgrad.jhu.edu/academics/graduate-board/deadlines](http://homewoodgrad.jhu.edu/academics/graduate-board/deadlines)) for KSAS master’s students, and for KSAS and WSE PhD students, the website of the WSE Office of Academic Affairs ([http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate](http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate)) (for WSE Masters), or by contacting their department administrator.

• Students who complete their master’s essay or doctoral dissertation after the end of a semester but before the first day of class of the next semester do not have to register for that next semester. (They will have to file for graduation in that semester, and will not be eligible for student paywll once they are no longer a registered student).

• Graduate students completing a final degree during the first eight weeks of the fall semester or the first four weeks of the spring semester will generate a tuition reimbursement for that semester to whatever entity covered the cost - the student, the department, the advisor, etc. This applies only to students for whom completion of a master’s project, master’s essay, master’s journal submission, or doctoral thesis is the sole remaining degree requirement at the start of the final semester.

• If a student completes a Tuition Deferral Form indicating an expectation to complete the degree within a specific grace period, no payment is required to register for that semester. However, if the grace period deadline is not met that semester’s tuition charge will be added to the student’s account.

• Note that students who complete in the Grace Period for either the fall or spring semesters (or finish in the summer term), and are registered in the semester/term in which they completed are eligible to stay on student paywll until the degree conferral date.

**Grades towards Degree Completion**

Grades must be submitted in SIS by the posted deadline for each semester, including grades for courses that are required for graduation. Graduating students who are taking courses at cooperative schools or other divisions of the University must make arrangements with their
instructors on the first day of class to have final grades submitted to the host school's Registrar and then to the Homewood Registrar by the Homewood grade submission deadline. If such an arrangement cannot be made, students should not remain enrolled in the course.

**Graduate Board**

The Homewood Graduate Board (http://homewoodgrad.jhu.edu/academics/graduate-board) is responsible for the administration of policies and procedures for the Doctor of Philosophy, Ph.D. of the Schools of Arts and Sciences and Engineering, and for Masters degrees in the School of Arts and Sciences.

The Graduate Board oversees:

- Graduate Board Oral (GBO) Examinations for ASEN Ph.D. students: with the approval of the department chair, a GBO may be scheduled at any time during the academic year. Requests for a GBO examination must be submitted to the Graduate Board a minimum of three weeks before the examination is to take place.
- Dissertation/Thesis Instructions: The student is responsible for obtaining and observing the detailed instructions concerning submission of their dissertation/thesis from their departmental office, and the Homewood Graduate Board Office. Visit http://homewoodgrad.jhu.edu/academics/graduate-board/degree-candidacy/ for more information.
- Initial Ph.D. Degree confirmation
- Dissertation submissions
- Recommendations for conferral to the Doctor of Philosophy Board
- See the Deadlines for Degree Completion (https://homewoodgrad.jhu.edu/academics/graduate-board/deadlines) website for more information.

**Doctor of Philosophy Board**

The Doctor of Philosophy Board (http://web.jhu.edu/administration/provost/initiatives/phd_board) advises the Provost about University-wide issues pertaining to the PhD. It approves new degree programs and sets guidelines and policies that affect all PhD. students. The Board respects the strong tradition of local autonomy of the Schools, and seeks to enhance the visibility and prominence of PhD. education across the University.

The Homewood Graduate Board submits its list of approved KSAS and WSE PhD conferrals to the Doctor of Philosophy Board for final university approval. No PhD degree is officially conferred until after the Doctor of Philosophy Board has approved and recommended conferral to the President of the University, and the President approves.

**KSAS Master’s Degree Completion**

- Minimum of two consecutive semesters of registration as a full-time, resident graduate student
- Certification by a department or program committee that all departmental or committee requirements have been fulfilled
- Thesis approved by at least one reader when the department or program requires a thesis
- Submission of the thesis to the library when a Master of Arts with essay is being requested
- KSAS Master’s Time to Degree Policy (https://grad.jhu.edu/downloads/KSAS%20Masters%20Time%20to%20Degree%20Policy.pdf)

**WSE Master's Degree Completion**

All Whiting School of Engineering master's students must complete all of the following steps for the degree to be conferred, and to generate a diploma:

- An Application to Graduate must be submitted to the Office of the Registrar either online or on paper, depending upon status;
- Department-specific certification forms must be submitted to and approved by the department graduate coordinator, and then those forms must then be submitted to the WSE Office of Academic Affairs by the published deadline(s);
- If a formal master's essay is used to complete degree requirements, the student must submit a properly-formatted essay to the MSE Library Electronic Theses and Dissertations system by the date listed on the WSE website; the emailed submission receipt (generated by the library) must be included in paperwork forwarded to the WSE Office of Academic Affairs.

Visit: http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/ for more information on deadlines and policies.

**Dissertation and Thesis/Essay Submission**

ETD (Electronic Theses and Dissertations)

An ETD is a digital version of a dissertation that is available to the public via the Internet. Universities and colleges in the United States and abroad have been moving toward this type of publication for the past decade. In the Fall 2013, Johns Hopkins launched its own ETD portal and process. All thesis and dissertation submissions must be through the ETD process and portal. See the ETD page for more information, deadlines, and instructions. (https://www.library.jhu.edu/library-services/electronic-theses-dissertations)

The student is responsible for obtaining and observing the detailed instructions concerning submission of their dissertation/thesis from their departmental office, the Homewood Graduate Board Office (http://homewoodgrad.jhu.edu/academics/graduate-board/degree-candidacy) and ETD guidelines (http://guides.library.jhu.edu/etd) of the Johns Hopkins Libraries and Museums. Students may also contact the ETD coordinator at etd-support@jhu.edu.

After submitting their dissertation to the ETD Submittal Tool (http://etd.library.jhu.edu), the library will check the dissertation for proper formatting and either approve it or contact the student to make required changes. After the ETD is approved the student will receive an approval confirmation from the system. Students are required to forward this approval email to their departmental academic staff and cc either the Assistant Dean for Graduate and Postdoctoral Academic Affairs in WSE (Christine Kavanagh) or the Director of Graduate and Postdoctoral Academic Affairs in KSAS (Renee Eastwood) as appropriate, with the following items:

- The title of their dissertation typed in the body of the email in title case format with correct spelling and punctuation.
- The degree type and program/department
- A single PDF of the dissertation title page and abstract

The degree requirements are not complete unless the final ETD is submitted to the library by the published deadline and the above information and attachments are provided by the student to the Graduate
Board Office via the email to the department and the cognizant Assistant Dean or Director of Graduate and Postdoctoral Academic Affairs.

Conferral Closes the Graduate Record
Upon degree conferral, the graduate's record is closed. No changes thereafter can be made to the graduate's transcript.

Graduate Alumni Enrollment
After degree conferral, KSAS and WSE Homewood graduate alumni who wish to enroll for coursework that does not lead to a degree are considered Visiting Graduate Students, and should follow the application and enrollment information located at http://homewoodgrad.jhu.edu/academics/visiting-grad-student-scholar-policies/

Student Life
Johns Hopkins is an active and supportive community, filled with students of different viewpoints, different cultures, and different backgrounds. The thing that brings them all together is their desire to be here and to celebrate everything Johns Hopkins has to offer. The following section details campus resources specifically relevant to the graduate student experience.

J-Card
The J-Card is the multi-use identification card used for Johns Hopkins students, faculty and staff. It is issued to students after registering for the first time. The Office of ID Card Services is located on the lower level of Garland Hall.

The card features typical identification information such as the person's name, photograph, classification (student, faculty or staff) and a randomly generated ID number.

The J-Card acts as the individual’s library card for the Sheridan Library network. It allows the student to enter the MSE Library beyond Q-Level, to reserve and borrow books and to pay for photocopies or document printing on library printers.

Students must show their J-Card in order to gain access to any campus computer lab. Additionally, student employees need to present their J-Card to pick up their paychecks from the Student Payroll Office.

The J-Card is also used for identification if a student has purchased a campus dining plan. J-Cash can be used at a number of restaurants and vending machines, on and off-campus. Funds can be added to any J-Card account online, over the phone, or by mail. Monday can also be added in-person at various locations on campus. For more J-Card and J-Cash information, visit http://studentaffairs.jhu.edu/jcard/.

Lost or stolen J-Cards should be reported to the Office of ID Card Services by calling (410) 516-5121 (weekdays 8:30 A.M. to 5 P.M.) or the Office of Security by calling (410) 516-4600 (all other times). The account will be temporarily suspended and a new J-Card will need to be issued for a nominal fee.

Bookstore
The University’s bookstore is located at the Barnes & Noble in Charles Commons on Saint Paul Street. Students can purchase textbooks and supplies at this location. Please visit their store website (http://johns-hopkins.bncollege.com/webapp/wcs/stores/servlet/BNCBHomePage?storeId=18053&catalogId=10001&langId=-1) for hours of operation and other pertinent information.

Computer Access
Computers available to all faculty, staff, and students are located in several public computer labs and kiosks across the Homewood Campus. Labs in Krieger Hall and the Milton S. Eisenhower Library feature extensive software allowing users to print, access email, the internet, and perform other general tasks as well as more advanced computing required for coursework and research. Computer kiosk locations in Krieger Hall, the Mattin Center, Hodson Hall, Levering Hall, and throughout the MSE library have more limited functionality.

The largest of all the Homewood labs is the Krieger Academic Computing Lab, located in 160 Krieger Hall. To gain access to the lab, students must swipe their J-Card at the locked gate. A lab consultant can be contacted during working hours by calling (410) 516-4242 or emailing consult@jhu.edu.

Security, Shuttles and Transportation
Security
The Johns Hopkins University Campus Safety and Security Office is dedicated to establishing and maintaining a safe and secure environment in which to work and visit. The Homewood Communication Center operates 24-hours a day seven days a week at the Homewood Campus. In keeping with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, the Campus Safety and Security Office publishes crime reports and security bulletins. These may be found on their Campus Safety and Security Website (http://www.jhu.edu/security).

Campus Security and local emergency services including Baltimore City Police, Fire or Ambulance can be summoned through Homewood’s Communication Center from any campus phone by dialing 6-7777. The universal 911 number may also be used to reach Homewood’s Communication Center from any off-campus phone. From off-campus, dial (410) 516-4600 to reach security. Crime and safety concerns may be reported to Campus Safety and Security by calling on-campus emergency numbers, (410) 516-7777 or 911. Additional services include the following:

- Anonymous Tip Hotline
- Crime Prevention Tips
- Escorts
- Lost and Found
- Property Registration
- Rape Aggression Defense (RAD)

Visit http://security.jhu.edu/index.html for more information.

Shuttles and Transportation
Homewood Parking and Transportation provides several services to faculty, staff and students. The primary services include:

- Homewood - Peabody - JHMI Shuttle
- Keswick - Homewood - Eastern - JHMI Shuttle
- Blue Jay Shuttle
- Carey Business School - Homewood (evening) Shuttle
- Disabled Services

Visit http://ts.jhu.edu/ for schedules, locations and more information.

Student Employment
Student Employment Services is the human resources and employment center for full-time Homewood students who work for, or wish to work for,
the University during their enrollment at Hopkins. Student Employment processes all student paychecks and maintains employment records and supporting documents. The office also supports a web based job search program which students can access through the Student Employment Services website. Students on Nonresident status must keep in mind that they can be paid at an hourly rate only, and the number of hours worked on campus may not exceed 19.9 per week.

A student job fair, hosted by Student Employment, is held annually in September. Students have the opportunity to meet and interview with a variety of on- and off-campus employers at the fair. All tax forms and any other required paperwork must be filed with the Student Employment office before students are eligible to receive their first paycheck from the University. Volunteer opportunities and community-service information can also be found at this office.

Federal Work Study: Graduate students who meet certain financial-aid requirements have the option of applying for Federal Work Study (FWS) positions. FWS is a federally funded program that allocates funds to the University to pay a portion of the student’s salary. Approximately one-third of Hopkins students receive FWS funding. Eligibility for FWS positions is based on both the Free Application for Federal Student Aid (FAFSA) and the JHU Application for Financial Aid. The Office of Student Financial Services determines eligibility based on federal regulations. An FWS award is valid for one academic year. Students must reapply each year. The maximum FWS award is $2,000. Awards may be less, depending on the type and amount of other financial assistance a given student receives. FWS employees are limited to 20 hours of work per week.

Jobs posted on the Student Employment Services website indicate whether the position is FWS or non-FWS. Job fairs and student-employment orientations also offer opportunities for students seeking FWS employment. Positions are available both on and off-campus and encompass a wide variety of skills and interests, including lab work, web design, research, and many more. Students in FWS positions are not prevented from working other paying jobs.

For more information about Student Employment or to view current job postings and policies, please visit https://studentaffairs.jhu.edu/studentemployment/.

Travel Resources
As graduate students prepare to go overseas for research, or to attend a conference, it is helpful to consider administrative, health, and safety issues before leaving the country. Graduate students are urged to complete the Johns Hopkins Travel Registry. Though this service is optional, travel registration can facilitate faster support in the event of an overseas emergency.

For more information and resources, visit http://homewoodgrad.jhu.edu/student-services/travel-resources/.

Career Center
The Career Center has services ranging from resume and curriculum vitae development to on-campus recruiting. As graduate students begin thinking about professional opportunities to pursue with their degree, the Career Center can help explore how skills, values, interests, and personality fit into this decision-making process.

For more information, visit https://studentaffairs.jhu.edu/careers/.

Disabilities
Johns Hopkins University does not discriminate on the basis of gender, marital status, pregnancy, race, color, ethnicity, national origin, age, disability, religion, sexual orientation, veteran status, or other legally protected characteristic in any student program, activity administered by the University, admission, or employment.

A person with a disability is defined by the Rehabilitation Act of 1973, and by the Americans with Disabilities Act of 1990, as an individual who has a physical or mental impairment that substantially limits one or more major life activities, has a record of such an impairment, or is regarded as having such an impairment.

Student Disability Services Office (SDS)
The SDS Office assists the University in compliance with the provisions of the Americans with Disabilities Act of 1990 (ADA), ADA Amendments Act (2008) and Section 504 of the Rehabilitation Act of 1973 for full-time undergraduate and graduate students in the Krieger School of Arts and Sciences and the Whiting School of Engineering.

The SDS Office is located on the first floor of the Mattin Center, and can be reached at (410) 516-4720 or studentdisabilityservices@jhu.edu.

Visit http://studentaffairs.jhu.edu/disabilities/ for more information.

Tax Information
Student earnings are NOT automatically exempt from tax withholding, including Federal Work-Study earnings. All students are encouraged to complete and submit Tax Withholding Exemption Forms. Visit http://studentaffairs.jhu.edu/studentemployment/student-information/handbook/tax-information/ for more information.

The JHU Tax Office is available for general questions, and to point students to tax resources. The JHU Tax Office is unable to advise specifically on or prepare tax returns for JHU affiliates. Visit http://www.controller.jhu.edu/depts/tax/about_tax.html for more information.

Parking on Campus
Parking is available on campus for graduate students at the San Martin or Decker Garages at monthly rates. Graduate students receiving a paycheck from the University are eligible for payroll deduction to pay for parking. Hang tags for free evening and weekend parking alongside academic buildings are also available. Hang tags can be purchased for a nominal fee which are valid for a maximum of 3 years. Go to the Parking Office located in the South Garage (under Mason Hall and the Decker Quad), with your J-Card, to pick up your hang tag.

Visit http://ts.jhu.edu/Parking/index.html for more information.

In addition to these spaces, there are a number of metered and timed parking zones around campus. Check the ordinances governing these roadside spaces. Many have two-hour time limits.

Orientation and Welcome Events for New Graduate Students
There are many resources available to assist new students in their acclimation to the Johns Hopkins Community. Orientation and Welcome Events information can be found at http://grad.jhu.edu/student-life/orientation/, and resources on getting settled in Baltimore as a new graduate student can be found here: http://grad.jhu.edu/admitted-students/living-in-baltimore/
Recreation Center
Membership to the O'Connor Recreation Center is open to all faculty, staff, and students of the university. This includes Johns Hopkins University-Homewood, Peabody, School of Medicine, School of Public Health, School of Nursing, School of Education, Carey Business School, Bayview Medical Center, Johns Hopkins Hospital, School of Advanced International Study (SAIS), Johns Hopkins Medical Institutions, and the Applied Physics Lab (APL).

Gym
- Fitness and weight rooms
- Climbing wall
- Fields
- Tennis courts
- Pool (indoor)
- Experiential education
- Fitness classes (yoga, yogalates, pilates, step aerobics, cardio kick boxing, muscle classes and dance-based classes). NOTE: there may be a fee involved for classes.

Visit https://studentaffairs.jhu.edu/recreation/or call (410) 516-5229 for more information.

Campus Ministries
Johns Hopkins University Campus Ministries promotes and supports spiritual development, theological reflections, religious tolerance and social awareness among students, faculty and staff within the university community. At its heart, Campus Ministries is a prophetic and pastoral presence which seeks to enhance the spiritual and ethical educational experience of the whole person mind, body and soul.

Visit https://studentaffairs.jhu.edu/campus-ministries/or call (410) 516-1880 for more information.

Community Engagement
The Center for Social Concern emphasizes the value of service with others. Volunteers and community members enter into an educational process where both benefit from the interaction, and reciprocal learning is the common ground for all of our initiatives. Our programs and efforts are striving to create a strong community in and around the Johns Hopkins campus.

Visit https://studentaffairs.jhu.edu/socialconcern/ or call (410) 516-4777 for more information.

Housing
Johns Hopkins University does not offer graduate student housing. Prior to or upon arrival, graduate students should secure their own independent housing.

The Baltimore City neighborhood immediately surrounding the Homewood campus is called Charles Village. In addition, there are lots of other proximal areas in which students may consider living including Hampden, Waverly, Roland Park, Guilford, Remington, Mt. Vernon and others.

Incoming graduate students in the Krieger School of Arts and Sciences and the Whiting School of Engineering who need housing accommodations while looking for a place to live can contact the Community Living Office for information on temporary housing.

Visit http://studentaffairs.jhu.edu/community-living/ or call (410) 516-8597 for more information.

Dining Services
An assortment of entrees, snacks, coffee beverages and other fare is available at a variety of on-campus locations that are open during all three meals and snack-times. Homewood's dining services can accommodate students with dietary restrictions whether that would be kosher, vegetarian, vegan, or other requirements. All locations accept J-Cards and cash, and some take credit cards.

Off-Campus Dining: There are many restaurants surrounding the campus and in adjacent neighborhoods. For the "insider's guide" to these venues, please contact the Graduate Representative Organization (GRO), which publishes information and student reviews on these and other Baltimore eateries. Visit the GRO's website at https://studentaffairs.jhu.edu/gro/.

Meal Plans: Graduate students may opt to enroll in a meal plan. Meal plans on the Homewood campus are based on a block meal system, designed for both convenience and flexibility. Each block counts as one meal. Blocks expire at the end of each semester. Added to blocks, points allow students to purchase food at the Levering Food Court, and Blue Jay Café. Points have a dollar-for-dollar value, and roll over from the fall to the spring, expiring at the end of the spring semester.

Additional information on specific plans, kosher or other dining options is available through the Community Living Office at http://studentaffairs.jhu.edu/community-living/dining-programs/.

Weather Emergencies
When there is an alteration or curtailment of the operating schedule of the University or a designated unit, an official announcement will be made on the University Emergency Telephone Hotline. As conditions may vary in the geographic areas where Johns Hopkins has campuses, there may be times when the Required Attendance Policy is invoked for some campuses and not others. In addition, conditions may be different on campus than they are in the area where a student lives. In times of bad weather, students should call the University Emergency Telephone Hotline to check on the status of the campus where they work.

- Baltimore - (410) 516-7781
- Outside Baltimore - (800) 548-9004

Each year the University publishes a list of radio and television stations that will be requested to announce operation changes. Because there can be mistakes in the message broadcasted, students can verify the message by calling the University Emergency Telephone Hotline. Students may also check the JHU emergency resources at https://www.jhu.edu/alert/.

Graduate Student Organizations and Advocacy
There are a variety of graduate student organizations on campus, ranging from cultural, athletic, academic and social. For a sample of what is available to graduate students, please visit http://homewoodgrad.jhu.edu/life-at-hopkins/graduate-student-organizations/.
(http://homewoodgrad.jhu.edu/life-at-hopkins/graduate-student-organizations/) For additional academic, cultural, athletic and social groups/organizations/clubs, please visit https://studentaffairs.jhu.edu/gro/events/list-of-groups/. Every group/organization/club is different, and some may only be open to undergraduate students, or to students from a certain campus, where others may not be bound by similar parameters. For more information, graduate students are encouraged to directly
contact any group/organization/club in which they are interested. There are also several offices and student groups on the Homewood Campus that advocate for graduate students on issues both academic and pertaining to student life.

**Graduate Representative Organization**

The Johns Hopkins University Graduate Representative Organization (GRO) works with specific divisions to represent graduate student interests (health insurance subsidies, compensation) to various levels of the JHU administration. The GRO organizes graduate student orientation, social events, sports activities, funds campus groups, and much, much more. Indeed, the GRO is proud to have earned the National Association of Graduate-Professional Students’ (NAGPS) 2000 – 2001 Outstanding Graduate Student Association award, its highest honor.

The GRO is made up of graduate student representatives from every department at Homewood. This group of representatives, the GRO General Council, elects an Executive Board for an annual term. Together, the Council and Executive Board are responsible for programming, advocating, and facilitating communication for graduate students on the Homewood Campus. The GRO also holds occasional programs with the student government on the Medical Campus.

Visit the GRO at https://studentaffairs.jhu.edu/gro/.

Baltimore, the largest city in Maryland, is the center of a metropolitan area of 1.5 million people. Baltimore is a vital city long known for its ethnic neighborhoods where each wave of immigration to the United States has added to its character. People of many different backgrounds give the city a melting pot vitality that is reflected in the wide variety of restaurants, shops, and festivals. Information about Living in Baltimore is located at http://grad.jhu.edu/admitted-students/living-in-baltimore/.

**Krieger School of Arts and Sciences Contacts**

Matthew Roller
Vice Dean of Graduate Education, and Centers and Programs
410-516-8211
mroller@jhu.edu (mrollwe@jhu.edu)
Wyman N600

Renee Eastwood *(Can assist with both student life and academic issues in the KSAS)*
Director of Graduate and Postdoctoral Academic Affairs
410-516-8477
rseitz5@jhu.edu
W601 Wyman Park Building

**Whiting School of Engineering Contacts**

Edward R. Scheinerman
Vice Dean of Graduate Education
410-516-7210
ers@jhu.edu
3 West, Wyman Park Building

Christine Kavanagh *(Can assist with both student life issues and academic issues in the WSE)*
Assistant Dean for Graduate and Postdoctoral Academic Affairs
410-516-5938
christinekavanagh@jhu.edu
3 West, Wyman Park Building

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**The Office of Institutional Equity**

**Disability Services and Compliance**

The Director of ADA Compliance and Disability Services in the Office of Institutional Equity serves as the central point of contact for information on physical and programmatic access, specific accommodations, resolution of complaints and problems, faculty and staff concerns, and identification of available services. In addition, the office can provide training, consultation, and information regarding disability issues.

Contact: Director (410) 516-8075, studentdisabilityservices@jhu.edu

Graduate students in the Krieger and Whiting Schools can also visit the Disabilities page: http://studentaffairs.jhu.edu/disabilities/.

**Discrimination/Compliance**

The Office of Institutional Equity Compliance and Education is responsible for the investigation and resolution of discrimination complaints received from faculty, staff, and students at Johns Hopkins University. OIE also provides mediation services for University related issues, as well as, education/training on sexual harassment.

Visit http://oie.jhu.edu/ or call (410) 516-8075 for more information. Information is also available at http://homewoodgrad.jhu.edu/student-services/sexual-assault-and-awareness/.

**Health and Wellness**

**Health Benefits (CHP- Cigna)**

It is University policy that all full-time students in the Schools of Arts and Sciences and Engineering maintain adequate health insurance coverage to provide protection against unexpected accidents and illnesses. As a full-time student, you must either purchase the University plan, or sign a waiver indicating you have health insurance coverage comparable to the University plan (International Students are required to purchase the University plan). Details about student health benefits offered by the University is available at https://studentaffairs.jhu.edu/Registrar/students/student-health-benefits/ (http://web.jhu.edu/registrar/students/health)

NOTE: all full-time programs graduate students are auto enrolled into coverage, and are responsible for following up with the Office of the Registrar’s Health Insurance Desk if they want to make any changes, or have any questions about enrollment in the plan.

**Health and Wellness Center**

The Johns Hopkins University Student Health and Wellness Center exists to affirm the clear role of health and wellness in advancing academics. Its primary mission is to maintain and contribute to a healthy and safe learning environment for the student community in the Schools of Arts and Sciences, and Engineering.

Visit https://studentaffairs.jhu.edu/student-health/ or call (410) 516-8270 for more information.

**Counseling Center**

The Johns Hopkins University Counseling Center serves full-time undergraduate and graduate students from the schools of Arts and Sciences, Engineering, Nursing, and the Peabody Institute. All of these students are encouraged to utilize the services offered by the Counseling Center. All services are confidential and free of charge.

The Counseling Center provides services to assist students in meeting their personal and mental health needs and goals. The Center has the resources to provide individual and group therapy, as well as psychiatric services/sexual-assault-and-awareness/.
consultations to meet the needs of most students. These services are free of charge. The Center also offers consultation to students, faculty, staff, and parents on questions about situations and issues related to students and student-life problems.

Visit https://studentaffairs.jhu.edu/counselingcenter/ or call (410) 516-8278 for more information.

International Graduate Students

The Office of International Services (OIS) assists Hopkins’ international community with visa status and with the challenges of making a transition from one setting to another.

The OIS staff are prepared to help with daily issues students face in adapting to an academically and culturally different environment. This office should be considered by international students as their primary source for important information regarding their status in the United States.

OIS staff members can answer questions and advise students on immigration regulations, financial concerns, health matters, housing, employment possibilities and other issues relating to an international student’s period of stay in the U.S.

International Bridge Program

Studying in a foreign country can be both challenging and exciting. International students often experience a period of cultural adjustment when they first arrive to the United States and specifically Johns Hopkins University.

The International Student Bridge Program (http://ois.jhu.edu/News_and_Events/Presentations/International_Bridge_Program) is designed to better support this transition process for new international graduate students through monthly informational seminars and presentations on practical subjects- such as adjusting to graduate school in the US, taxes, credit in the United States, career preparations and enhancing communication and networking skills.
# DEPARTMENTS, PROGRAM REQUIREMENTS, AND COURSES

## Course Identification
Courses listed in the catalog are those the departments plan to offer; however, not every course is available during a given year. Necessarily, some courses will be canceled and other courses scheduled. The schedules of graduate and undergraduate courses for a given term are published before the end of the preceding term. In the course listings that follow, the credits shown are for one semester only. Effective Summer 2016, graduate level courses (courses numbered 600 and above) in the School of Engineering are assigned credits. Credit hours are not assigned to graduate level courses in the School of Arts and Sciences; many departments indicate instead the hours of class time per week.

A code number, indicating the department or program; a course number, indicating level; and sometimes a code letter, indicating area, for purposes of the distribution requirements, identify courses.

## Code Numbers
Department and program code numbers for the School of Arts and Sciences and Engineering are as follows:

<table>
<thead>
<tr>
<th>Code Number</th>
<th>Department/Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>362</td>
<td>Africana Studies</td>
</tr>
<tr>
<td>070</td>
<td>Anthropology</td>
</tr>
<tr>
<td>553</td>
<td>Applied Mathematics and Statistics</td>
</tr>
<tr>
<td>375</td>
<td>Arabic</td>
</tr>
<tr>
<td>136</td>
<td>Archaeology</td>
</tr>
<tr>
<td>290</td>
<td>Behavioral Biology</td>
</tr>
<tr>
<td>020</td>
<td>Biology</td>
</tr>
<tr>
<td>580</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>250</td>
<td>Biophysics</td>
</tr>
<tr>
<td>540</td>
<td>Chemical and Biomolecular Engineering</td>
</tr>
<tr>
<td>660</td>
<td>Center for Leadership Education</td>
</tr>
<tr>
<td>030</td>
<td>Chemistry</td>
</tr>
<tr>
<td>373</td>
<td>Chinese</td>
</tr>
<tr>
<td>560</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>040</td>
<td>Classics</td>
</tr>
<tr>
<td>050</td>
<td>Cognitive Science</td>
</tr>
<tr>
<td>300</td>
<td>Comparative Thought and Literature</td>
</tr>
<tr>
<td>601</td>
<td>Computer Science</td>
</tr>
<tr>
<td>270, 271</td>
<td>Earth and Planetary Sciences</td>
</tr>
<tr>
<td>310</td>
<td>East Asian Studies</td>
</tr>
<tr>
<td>180</td>
<td>Economics</td>
</tr>
<tr>
<td>520</td>
<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td>662</td>
<td>Engineering Management</td>
</tr>
<tr>
<td>060</td>
<td>English</td>
</tr>
<tr>
<td>370</td>
<td>English as a Second Language</td>
</tr>
<tr>
<td>660</td>
<td>Entrepreneurship &amp; Management</td>
</tr>
<tr>
<td>570</td>
<td>Environmental Health and Engineering</td>
</tr>
<tr>
<td>061</td>
<td>Film and Media Studies</td>
</tr>
<tr>
<td>500</td>
<td>General Engineering</td>
</tr>
<tr>
<td>210-216</td>
<td>German and Romance Languages and Literatures</td>
</tr>
<tr>
<td>384</td>
<td>Hebrew</td>
</tr>
<tr>
<td>381</td>
<td>Hindi</td>
</tr>
<tr>
<td>100</td>
<td>History</td>
</tr>
<tr>
<td>010</td>
<td>History of Art</td>
</tr>
<tr>
<td>140</td>
<td>History of Science and Technology</td>
</tr>
<tr>
<td>650</td>
<td>Information Security Institute</td>
</tr>
<tr>
<td>360</td>
<td>Interdepartmental</td>
</tr>
<tr>
<td>192</td>
<td>International Studies</td>
</tr>
<tr>
<td>194</td>
<td>Islamic Studies</td>
</tr>
<tr>
<td>378</td>
<td>Japanese</td>
</tr>
<tr>
<td>380</td>
<td>Korean</td>
</tr>
<tr>
<td>193</td>
<td>Jewish Studies Program</td>
</tr>
<tr>
<td>361</td>
<td>Latin American Studies</td>
</tr>
<tr>
<td>510</td>
<td>Materials Science and Engineering</td>
</tr>
<tr>
<td>110</td>
<td>Mathematics</td>
</tr>
<tr>
<td>530</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>145</td>
<td>Medicine, Science and the Humanities</td>
</tr>
<tr>
<td>374</td>
<td>Military Science</td>
</tr>
<tr>
<td>389</td>
<td>Museum and Society Program</td>
</tr>
<tr>
<td>376</td>
<td>Music</td>
</tr>
<tr>
<td>130-134</td>
<td>Near Eastern Studies</td>
</tr>
<tr>
<td>080</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>670</td>
<td>Nanobiotechnology</td>
</tr>
<tr>
<td>150</td>
<td>Philosophy</td>
</tr>
<tr>
<td>171-173</td>
<td>Physics and Astronomy</td>
</tr>
<tr>
<td>190-191</td>
<td>Political Science</td>
</tr>
<tr>
<td>661</td>
<td>Professional Communication</td>
</tr>
<tr>
<td>200</td>
<td>Psychological and Brain Sciences</td>
</tr>
<tr>
<td>280</td>
<td>Public Health Studies</td>
</tr>
<tr>
<td>377</td>
<td>Russian</td>
</tr>
<tr>
<td>230</td>
<td>Sociology</td>
</tr>
<tr>
<td>225</td>
<td>Theatre Arts and Studies</td>
</tr>
<tr>
<td>371</td>
<td>Visual Arts</td>
</tr>
<tr>
<td>363</td>
<td>Women, Gender and Sexuality</td>
</tr>
<tr>
<td>220</td>
<td>Writing Seminars</td>
</tr>
</tbody>
</table>

## Course Numbers
Course numbers have the following significance:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-299</td>
<td>Undergraduate course, lower level</td>
</tr>
<tr>
<td>300-499</td>
<td>Undergraduate course, upper-level</td>
</tr>
<tr>
<td>500-599</td>
<td>Independent study/research/internship</td>
</tr>
<tr>
<td>600-799</td>
<td>Course offered for advanced degree programs</td>
</tr>
<tr>
<td>800-849</td>
<td>Independent study/research and dissertation, graduate level</td>
</tr>
</tbody>
</table>
Code Letters
The following code letters are a guide to undergraduate distribution area designators and writing requirements:

<table>
<thead>
<tr>
<th>Code</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>(E)</td>
<td>Engineering</td>
</tr>
<tr>
<td>(H)</td>
<td>Humanities</td>
</tr>
<tr>
<td>(N)</td>
<td>Natural Sciences</td>
</tr>
<tr>
<td>(Q)</td>
<td>Quantitative Studies</td>
</tr>
<tr>
<td>(S)</td>
<td>Social and Behavioral Sciences</td>
</tr>
<tr>
<td>(W)</td>
<td>Writing-Intensive</td>
</tr>
</tbody>
</table>

Zanvyl Krieger School of Arts and Sciences
https://krieger.jhu.edu/

The Zanvyl Krieger School of Arts and Sciences is one of the core divisions of Johns Hopkins University’s Homewood campus. Our mission is the creation of new knowledge and the education of our students, undergraduate and graduate alike. Comprising 22 academic departments and more than 30 centers, programs, and institutes, the Krieger School is home to students interested in the humanities, natural sciences, social sciences, and the arts. The excellence of these programs dates back to 1876, when Daniel Coit Gilman assembled a faculty of philosophy of international distinction. Today, inquiry and discovery remain the engine and fuel that drive teaching and learning in the school. The departmental and program descriptions that follow are notable illustrations of the interdisciplinary offerings and opportunities available for a student to structure a unique field of study in the humanities, natural sciences, quantitative studies, and behavioral sciences.

Center for Africana Studies
http://krieger.jhu.edu/africana/

The Center for Africana Studies (CAS) offers a rigorous focus on African-descended peoples and their cultures across the globe. Over the past millennium, the contribution, traditions, and values of African, African-American, and African Diaspora cultures helped create the modern and pre-modern world. Africana Studies, as a field of study, grew from the activist and scholarly traditions of Black Studies and the blending of peoples and ideas between Europe, Africa, and the America. It therefore offers a broad, multidisciplinary approach to history and culture centered on the interests, conditions, philosophies, conceptual schemes, and value systems of African-descended people everywhere. Our courses focus on the human experience in the context of social, political, demographic, cultural, religious, and economic systems. They also offer a unique perspective on racism, colonialism, capitalism, and geography that properly situates the importance of people of color to the making of the modern world.

Africana Studies offers a multidisciplinary curriculum that expands the scope and range of traditional academic disciplines to the presence, roles, cultural contributions, experiences, and particular interests of African peoples and their descendants.

Requirements for a B.A. Degree
Also see Requirements for a Bachelor’s Degree (p. 7).

Students who choose to major in Africana Studies must complete at least 33 credit hours of course work in three areas of African Studies - African and African Diaspora Studies, African American Studies, and Urban Studies. All course must be taken for a letter grade and be completed with a grade of C- or better.

Core Courses (Select three of the following) 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.362.112 Introduction to Africana Studies</td>
<td>3</td>
</tr>
<tr>
<td>or AS.100.122 Introduction to History of Africa (since 1880)</td>
<td>3</td>
</tr>
<tr>
<td>or AS.100.123 Introduction to African History: Diversity, Mobility, Innovation</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twelve credits of 300-level or higher Africana Studies courses</td>
<td>12</td>
</tr>
<tr>
<td>Twelve credits at any level of Africana Studies courses</td>
<td>12</td>
</tr>
</tbody>
</table>

Total Credits: 36

Sample Program of Study
Freshman

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core course #1</td>
<td>3</td>
<td>Core course #2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core course #3</td>
<td>3</td>
<td>Africana studies course at any level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Africana studies course at any level</td>
<td>3</td>
<td>Africana studies course at any level</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africana studies course at 300-level or higher</td>
<td>3</td>
<td>Africana course at any level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Africana studies course at 300-level or higher</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africana studies course at 300-level or higher</td>
<td>3</td>
<td>Africana studies course at 300-level or higher</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 33

Honors

Students who wish to do honors in Africana Studies are required to take a two-semester research seminar, in which they will prepare an honors thesis in consultation with a faculty advisor in the student’s particular area of interest and the faculty coordinator of the undergraduate research seminar. The research seminar will provide guidance on research design, methodology, and analysis and presentation of findings, and give students an opportunity to discuss one another’s projects, share experiences, and receive constructive comments from their peers as well as the faculty coordinator.

In selecting research topics and collecting materials, students are encouraged to explore resources outside those immediately available on campus. With its rich collection of museums and archives, large and historic African-American communities, and growing populations of recent migrants from Africa, the Baltimore-Washington area offers many opportunities for research in Africana Studies. Students who wish to...
undertake research in Africa or in African American or African diasporic communities beyond the local area will be encouraged to take advantage of summer research grants and/or study abroad opportunities available at Hopkins. The center will work with other departments and programs at Hopkins on behalf of students who wish to combine their research in Africana Studies with work in another field or ongoing program, such as the joint Minority Health Program recently established by the School of Public Health and Morgan State University.

Undergraduate Minor Requirements

Students who wish to minor in Africana Studies must complete a minimum of 18 credits, including two core courses and electives. Three of the electives must be upper-level courses. All course must be taken for a letter grade and be completed with a grade of C- or better.

Core Courses (Select two of the following) 6

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.362.112</td>
<td>Introduction to Africana Studies</td>
</tr>
<tr>
<td>or AS.100.122</td>
<td>Introduction to History of Africa (since 1880)</td>
</tr>
<tr>
<td>or AS.100.123</td>
<td>Introduction to African History: Diversity, Mobility, Innovation</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three credits at any level of Africana Studies courses</td>
<td>3</td>
</tr>
<tr>
<td>Nine credits of 300-level or higher Africana Studies courses</td>
<td>9</td>
</tr>
</tbody>
</table>

Total Credits 18

For current faculty and contact information go to http://krieger.jhu.edu/africana/directory/index.html

Faculty

Co-Director
Katrina Bell McDonald
Co-Director, Department of Sociology

Lester Spence
Co-Director, Department of Political Science

Associate Director and Director of Undergraduate Studies
Nadia Nurhussein
Associate Director, Department of English

Executive Board
Michael Degani
Department of Anthropology

Jeanne-Marie Jackson
Department of English

Lawrence Jackson
Bloomberg Distinguished

Jessica Marie Johnson
Department of History

Roland J. Thorpe, Jr.
Bloomberg School of Public Health

Katrina Bell McDonald
Co-Director, Department of Sociology

James Calvin
Carey Business School

Shani Mott

Center for Africana Studies

Hollis Robbins
Department of Humanities, Peabody Institute

John Burtborne Sampson
School of Medicine

Lester Spence
Co-Director, Department of Political Science

Professors Emeriti

Sara Berry
Department of History

Jane Guyer
Department of Anthropology

Affiliated Faculty

Kim Gallon
Center for Africana Studies

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.362.109. Introduction to African American Literature- Part II. 3.0 Credits.

This course will offer students an introduction to the central novels, plays, short stories, essays and poetry that have constituted African American Literature from 1930-1980. By focusing on representative works that span each of the major periods from the Harlem Renaissance to the Black Arts Movement, we will continue to consider the question of race and representation. How does one represent the race? And, for whom should black authors write – a white audience in order to change their minds about black people, or to black people for their pleasure and edification? Over the course of the semester, we will trace the various ways early- to late- 20th century black writers sometimes borrowed from earlier literary traditions and, at other times, developed new ones. In addition, we will hone in on the major debates and central texts that have come to define African American Literature and explore how it has long served as a creative, political, and intellectual enterprise.

Instructor(s): S. Mott
Area: Humanities, Social and Behavioral Sciences.

AS.362.110. Colonial Encounters: Artistic Responses. 3.0 Credits.

This course disrupts conventional ways of seeing, reading, and examining artistic texts. When we read a novel or study a work of art, especially that produced by white people, we tend to treat it as representative of the nation, talk about its aesthetic genius, or discuss it as reflecting its social/historical moment. Black artistic production, on the other hand, is most often treated as “protest,” as that which simply responds to a national narrative. But what would happen if we treated the experience of black people and other people of color as universal? What would happen if we treated colonialism as the dominant social and intellectual problem of our age?

Instructor(s): S. Mott
Area: Humanities, Social and Behavioral Sciences.
**AS.362.111. Introduction to African American Studies. 3.0 Credits.**
This is an introductory course on the African-American experience. People of African descent were brought by force to the United States (and other parts of the "New World") yet still managed to forge a rich, resilient, and collective existence. Despite the cruelty of the institution of slavery, African Americans carved out their own cultural systems and a complex body of political and social ideas about the significance of their African roots, as well as the contradictory practices of American democracy and the oppression of black people. This course surveys and analyzes a wide spectrum of contributions made by intellectuals, political leaders, organizations, and race-based strategies that interdependently led to African Americans securing a central and unyielding place in American society.
Instructor(s): K. McDonald
Area: Humanities, Social and Behavioral Sciences.

**AS.362.122. History of Africa (since 1880). 3.0 Credits.**
An introduction to the African past since 1880.
Prerequisites: Students are not allow to take both 100.122 and 362.122.
Instructor(s): K. Gallon
Area: Humanities, Social and Behavioral Sciences

**AS.362.123. Introduction to African American Literature (Part 1). 3.0 Credits.**
In "Introduction to African American Literature," we will examine some of the major debates and central texts of African American literature from the 18th century to the turn of the 20th century. We will focus on the relationship between race and representation and the growing complexities around those representations. In addition to addressing questions of race, we will also consider how gender, sexuality, and class intersected with racial identity and representation in the creation, production, and selling of African American literature. This course is designed to give you a broad sweep of the African American literary landscape, turning our attention to poetry, novels, short stories, plays, and essays. In addition, this course will provide you with the opportunity to explore the diverse nature of black literature and encourage the reading of African American literature with a fine critical understanding and aesthetic appreciation.
Instructor(s): S. Mott
Area: Humanities, Social and Behavioral Sciences

**AS.362.160. "Land, Labour and Environmental Rights and Struggles in Contemporary Africa". 3.0 Credits.**
‘Africa rising’ has become an influential, albeit contested, narrative used by institutions like the International Monetary Fund and World Economic Forum to describe the rapid economic growth in 21st century Africa. This rapid ‘economic growth has been accompanied by another type of ‘Africa Rising’ – a mushrooming of social protest and popular uprisings across the continent. The course will introduce important theoretical perspectives, debates, and examples to equip students to critically examine contemporary social dynamics through the interconnected themes of land, labor and environmental rights and struggles that have gripped the African continent. What has given rise to these awakenings? Who are the actors involved in these actions? What are their demands and strategies? What lessons does it hold for social movement theory and development more broadly? The first section focuses on land reclamation movements, the new wave of ‘land grabs’ and responses from below. The second section presents the role of labour movements and its intersection with popular uprisings. The third section considers responses from communities and movements to the ecological destruction and climate change.
Instructor(s): R. Jacobs
Area: Humanities.

**AS.362.175. Freshman Seminar: Remembering the Black Power Movement. 3.0 Credits.**
This course explores trends, developments, contradictions, and dilemmas related to the Black Power Movement. The objective of studying this historical movement is not to engage in nostalgia, but to think through and learn the lessons of this historic social movement. An active participant in the Black Power Movement as a university undergraduate and graduate student, I do not approach this subject merely as a set of interesting intellectual issues and dynamics that can be explored with complete dispassion and objectivity. Rather, I seek to examine critically some of the contradictions and dilemmas that I, too, was caught up in, seeking to come to grips with and clarify my own participation and activities. We study these historical events with the expectation of making a positive contribution to the future.
Instructor(s): F. Hayes
Area: Humanities, Social and Behavioral Sciences

**AS.362.180. History of Black Americans. 3.0 Credits.**
This survey course addresses the making and historical experiences of African Americans from the emancipation of slaves in the later nineteenth century to the conclusion of the twentieth century.
Instructor(s): J. Ashton
Writing Intensive.

**AS.362.200. Race and Power in American Cinema. 3.0 Credits.**
This course will examine changing norms of racial representation in American cinema and consider those images in relation to the operations of the film industry and to specific moments in U.S. history that informed cinematic representations of race. In particular, we will be analyzing film as a social practice that creates meanings that inform both everyday practices and deliberations over many of the most important issues and debates in American society. Ultimately, the goal is to gain a better appreciation for how the stories films tell us shape our personal and collective identities and inform our understanding of political life.
Instructor(s): A. Culver
Area: Humanities, Social and Behavioral Sciences.
AS.362.201. African American Poetry and Poetics. 3.0 Credits.
In this course, we will follow the development of black poetry primarily as it has evolved in the United States. Beginning with the first published African American writers of the eighteenth century and ending with several important poets writing and performing today, we will consider the shape of the African American poetic tradition as commonly anthologized and as defined by our own theoretically-informed readings of the assigned literature. Attention will be given to both canonical and neglected literary movements and groups. Readings will include poetry and essays by Frances E.W. Harper, James Weldon Johnson, Langston Hughes, Gwendolyn Brooks, Amiri Baraka, Harryette Mullen, Tracie Morris, and others.
Instructor(s): N. Nurhussein.
Area: Humanities

AS.362.202. Colonial Encounters and Literary Responses. 3.0 Credits.
This course considers how black writers of the diaspora engaged the history and realities of colonialism and imperialism. While some novelists wrote specifically about the colonial encounter and its consequences, others chose to critique the enterprise by rewriting -- from the perspective of the colonized -- the literary tradition of the colonizing nation. Focusing on works by African, Caribbean, and American writers alongside the British tradition to which they respond, we will look at how diasporic writers thought about and constructed ideas about the world, the self, and the racial Other.
Instructor(s): S. Mott
Area: Humanities, Social and Behavioral Sciences.

AS.362.203. Passing in American Culture. 3.0 Credits.
This course will examine film and literary narratives of “passing” in 20th century America. We will study texts that feature people who cross social boundaries of race, class, sexuality, and gender, and consider what “passing” reveals about American social mobility.
Instructor(s): S. Mott
Area: Humanities
Writing Intensive.

AS.362.207. Race and public policy in comparative perspective. 3.0 Credits.
This course will explore the relationship between racial inequality, racial politics, and policy-making in the western world, particularly as it concerns the fight for equality by people of African descent in the US, Canada, Britain, and France. It will cover historical and contemporary struggles over policy, beginning with the African-American civil rights movement, the ensuing War on Poverty and War on Drugs, and followed by contemporary debates over immigration, racial segregation, poverty and racial economic inequality across the four countries. We will take insights from theory and empirical research to study the role that racial constructs and politics play in policy designs, contests over power and resources, electoral representation, public opinion, social movements, and political change. Through case studies of policies aimed at racial inequality (e.g., affirmative action, police reform, urban revitalization), we will examine why and under what circumstances they arise, what form they take, and in what ways they alleviate or reproduce racial inequality. These questions will be considered in light of the broader impact of neoliberalism on normative ideas about policy, race, and inequality.
Instructor(s): A. Livingstone
Area: Humanities.

AS.362.219. Freshman Seminar: Black Narratives and the Archive. 3.0 Credits.
This course will explore the various ways black people have narrated stories. From the slave narrative to fiction, biography to oral history, we will consider the relationship between historical events and the stories that people tell about those events. Where does history and imagination meet in the telling? How does one weave together story material to give it shape? While we will spend the first half of the semester engaging published and more popular narratives about black life, the second half of the course will focus on interviewing and archiving the stories of black workers and staff at JHU. What kinds of stories do they tell? How do they tell them? What do their stories help us understand about the past? Ultimately, this course will concern itself with what it means to be black and the various ways everyday people and artists alike have attempted to narrate their experiences in both writing and oral forms.
Instructor(s): S. Mott
Area: Humanities
Writing Intensive.

AS.362.220. America, Post-Civil Rights. 3.0 Credits.
This course will explore the role of the 1964 Civil Rights Act and mid-twentieth century reform movements in transforming American politics, economy, and culture since the late 1960s.
Instructor(s): N. Connolly
Area: Humanities
Writing Intensive.

AS.362.221. African American Poetry and Poetics. 3.0 Credits.
This seminar explores the literary and political influences of poetry written and published by African Americans from the 18th century to the present (from Phyllis Wheatley to Terrance Hayes).
Instructor(s): H. Robbins
Area: Humanities
Writing Intensive.

AS.362.241. Seeing the Unspeakable: Baltimore, #BLM, and Kara Walker. 3.0 Credits.
The advents of smartphone technology, social media platforms, and the 24-hour cable news cycle has made violent images of Black death and dying ubiquitous. The public consumes these images unremittingly and the political phenomenon. Additionally, students will spend the semester creating multimedia archival projects that explore these images and their political impact on Baltimore. In doing so, students will explore the politics bound within, pressed upon, and interpreted from the Black body.
Instructor(s): B. Carter
Area: Humanities, Social and Behavioral Sciences.

AS.362.304. Reading and Writing Black Poetry. 3.0 Credits.
This course is an exploration of twentieth and twenty-first century black poetry and poetics. Readings include Paul Laurence Dunbar, Langston Hughes, Gwendolyn Brooks, Amiri Baraka, Sonia Sanchez, Nikki Giovanni, Lucille Clifton, Rita Dove, Natasha Trethewey, Terrance Hayes, Claudia Rankine, and Danez Smith. Texts will be mined for theme as well as formal technique as a basis for poetic experimentation.
Instructor(s): A. Gunn
Area: Humanities
Writing Intensive.
AS.362.305. Black Periodical Studies. 3.0 Credits.
This course explores the ways in which nineteenth- and twentieth-century black periodical culture fostered (and, at times, hampered) the literary and cultural production of the African diaspora. Authors will likely include Frederick Douglass, "Ethiop (William J. Harper)," Frances E.W. Harper, Pauline Hopkins, W.E.B. Du Bois, Marcus Garvey, Jean Toomer, Langston Hughes, Richard Bruce Nugent, and others.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.

AS.362.314. Police and Prisons in Comparative Perspective. 3.0 Credits.
This course will examine policing and prisons in the United States and beyond, with a focus on racial inequality. It will consist of two parts. First, we will explore the contemporary state of prisons and policing in the United States and look at debates around the rise of "mass incarceration" and aggressive forms of policing in the final third of the 20th century. Second, we will explore policing and prison in other parts of the globe in the contemporary moment, highlighting similarities and differences from the U.S. case. What can studying the instruments of social control in other societies reveal about our own? Students will develop an understanding of major trends, keywords, and debates in the literature on policing and prisons, with particular reference to race and racism.
Instructor(s): S. Schrader
Area: Humanities.

AS.362.325. The Role of "Place" in Racial Ethnic Health Disparities. 3.0 Credits.
This course will introduce students to racial/ethnic health disparities, the need to examine the role of "place", how the characteristics of where people live affects individual's health, and how this leads to racial/ethnic health disparities. The course will first examine large-scale measures of place, then down to smaller scale measures. Students will discuss various theories generally associated with racial/ethnic health disparities, as well as, the extension of "place" theories to this topic. Students will apply this knowledge through various assignments and activities about racial/ethnic health disparities of interest. These activities include class discussions, group assignments and development of interventions and solution-focused policy recommendations. This course is being offered for sophomores, juniors and seniors who have completed a statistic course or who have received permission from the instructor.
Prerequisites: Students may receive credit for AS.280.411 or AS.362.325, but not both.
Instructor(s): C. Bell
Area: Humanities.

AS.362.332. #Digital Blackness. 3.0 Credits.
#BlackLivesMatter, #SayHerName, #ICantBreathe #IfIDieInPoliceCustody #BlackOutDay are just some of the many hashtags that black people have recently created and used on Twitter to protest police brutality and proclaim their full humanity. Over the past two decades Black people have utilized a variety of digital spaces and media to reconfigure the terms and terrain of debates and discussions on what it means to be Black in the United States and larger world. This course is an interdisciplinary investigation into the relationship between historical and contemporary cultural, social and political expressions of Blackness and the digital. More specifically, lectures, readings and class discussions will deconstruct the cultural, political economy and social construction of Blackness in the digital in an effort to uncover the ways that meanings of race more broadly and Blackness more narrowly influences and shapes Black Americans' present social status and struggles for social justice. This course is designed to provide a "hybrid" experience, including both face-to-face (F2F) and online class meetings.
Instructor(s): K. Gallon
Area: Humanities.

AS.362.340. Power and Racism. 3.0 Credits.
This course investigates the impact of white supremacy and anti-black racism, as a global system of power, on the political development of the United States of America.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.

AS.362.344. Education Politics in Urban America. 3.0 Credits.
This seminar analyzes trends, developments, and future challenges related to the politics of urban public schooling with a concentration on community political dynamics and the struggle for equal educational opportunity and quality education. The course emphasizes the impact of socioeconomic class inequality, racial/ethnic conflict, and gender politics on the changing character of public school reform since the 1954 Supreme Court decision of Brown v. Board of Education. Cross-listed with Africana Studies.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.

AS.362.371. Public Health Crisis in Africa. 3.0 Credits.
This course examines the historical and current public health crises in Africa. Topics covered include infectious diseases and viral outbreaks, water and food access, sanitation, education, behavioral health, gender equality, health care and health care access, as well as the link between culture, economics and health. Introduction to Epidemiology is recommended but not required.
Instructor(s): M. Smart
Area: Humanities, Social and Behavioral Sciences.

AS.362.412. Black Political Thought. 3.0 Credits.
This course examines how modern black political thought emerged through a series of critical engagements with Enlightenment ideas about universalism, progress, the authority of reason, and the foundations of citizenship. Course readings include texts by W. E. B. Du Bois, Angela Davis, James Boggs, Frantz Fanon, bell hooks, and others.
Instructor(s): L. Spence
Writing Intensive.
AS.362.413. African American Representations in the Western. 3.0 Credits.
The course will investigate American cinematic representations of African Americans, slavery (and more specifically its absence), the Civil War, and racial formation along the United States' southwestern frontier in films produced from the 1950s through the contemporary period. The course closely examines American cinematic fantasies of the western frontier, frontier violence and the desire to escape or erase the tensions of race and slavery that have deeply permeated the American cultural consciousness, strongly shaping the production of American masculine ideals. The course will also take decided note of the national shift from liberal “Great Society Programs” of the 1960s to the conservative “neoliberal” social and cultural ideals in the 1980s and 1990s. Our purpose is to consider the organization and reformation of hegemonic power by way of the complex morality play the western film evokes, typically considering the interstitial geographies between blackness and whiteness, civilization and savagery, belonging and alienation, and metropolis and colonial outpost. We will privilege in our discussions the contested frontiers of racial dominion. Films include “Buck and the Preacher,” “The Battle of Algiers,” “Sgt. Rutledge,” and “Django Unchained.”
Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

AS.362.440. Oppression and Revolt. 3.0 Credits.
This seminar examines the history, theory, and practice of oppression and rebellion in Africa, the Caribbean, and the United States of America. The seminar will focus on popular struggles for liberation against systems of slavery, colonialism, sexism, and racism.
Instructor(s): F. Hayes
Area: Humanities
Writing Intensive.

AS.362.450. Critical Thinking in Africana Studies. 3.0 Credits.
This seminar examines various ideas, theories, and practices of thinkers, writers, and activists whose work and practices have constituted an Africana Studies intellectual tradition. The purpose of this seminar is to teach students to read, think, and write critically about questions relative to the formation and history of Africana thought and its intellectual tradition, in particular, and the genealogy of thought and intellectual traditions, in general. We will also think about various fields of knowledge that have shaped Africana Studies. The seminar therefore will work through the different meanings of intellectual work and critical thought and theory in Africana Studies.
Instructor(s): F. Hayes
Writing Intensive.

AS.362.510. Senior Honors in Africana Studies I. 3.0 Credits.
The first semester of Senior Honors in Africana Studies, conducted as an Independent Study. Interested students should submit an application to the CAS Director of Undergraduate Studies.
Instructor(s): Staff
Writing Intensive.

AS.362.590. Independent Study for Africana Studies. 3.0 Credits.
Instructor(s): L. Spence
Writing Intensive.

AS.362.595. Summer Internship. 1.0 Credit.

Cross Listed Courses

History of Art
AS.010.305. Global Modern Art: Africa, Asia, the Pacific and the Americas. 3.0 Credits.
Artists around the world grappled with the modern, working through local concerns and struggles but continually engaged with counterparts in Europe, North America, and across the “global South.” This course will introduce art, artists, movements, and institutions of modernism from approximately 1880 to the present and from outside of the northern Atlantic while critically examining the very notion of “global modernism.”
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

English
AS.060.124. Politics, History and Autobiography. 3.0 Credits.
Students will write a mini-autobiography in the form of seven 3000 word essays, work shopped in class. Readings include A Small Place by Jamaica Kincaid and Brothers and Keepers by John Edgar Wideman.
Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

AS.060.129. Writing Africa Now. 3.0 Credits.
This course surveys post-2000 literary and cultural production from sub-Saharan Africa. Topics will include debates over genre and fiction's relevance to African experience, legacies of canonical writing about independence, urban Africa as violent or “tragic” landscape, and problems of scale and geographical context. Readings by authors such as Adichie, Wainaina, Duiker, and Vladislavic, and students will be introduced to the main print and online arteries of African intellectual discussion. This class is for non-majors and does not count towards the English major or minor.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.223. African American Literature from 1900 to Present. 3.0 Credits.
A survey of the major and minor texts written by African Americans during the twentieth century, beginning with Charles Chesnutt's The Marrow of Tradition and concluding with Toni Morrison's Beloved.
Instructor(s): L. Jackson
Area: Humanities

AS.060.335. Black Satire. 3.0 Credits.
In this course, we will explore the use of satire in black literary and artistic traditions. Reading will likely include poems and novels by Paul Laurence Dunbar, George S. Schuyler, Claude McKay, William Melvin Kelly, Ishmael Reed, Fran Ross, Percival Everett, and others. In addition, we will venture into the genres of film (“Get Out”) and visual art (work by Glenn Ligon and Kara Walker, the latter currently on exhibit at the BMA). The politics of satire emerge in these texts particularly through the treatment of racial uplift and respectability ideologies, race relations, the legacies and histories of slavery, visions of utopia and dystopia, and the concept of the “post-racial.” With attention to the historical and cultural conditions under which these works were produced, we will address the ways in which satire can (or cannot) effect change in the world.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.
AS.060.340. The Literature of Atlantic Slavery. 3.0 Credits.
This seminar will trace the historical development of the slavery debate in the Atlantic world through examination of key texts from a host of genres and locations—Quaker religious tracts, political documents like the Haitian Declaration of Independence, Cuban antislavery novels, slave narratives, and "classics" of American literature like Melville’s Benito Cereno. We will consider how the institution of Atlantic slavery was variously represented, justified, and criticized, discovering in the process the deep structures of modern slavery discourse. Texts may include: Aphra Behn, "Oroonoko"; John Woolman’s "Journal"; Robert Wedderburn, "The Horrors of Slavery and Other Writings"; Gertrudis Gomez de Avellaneda, "Sab"; Frederick Douglass, "My Bondage and My Freedom"; Herman Melville, "Benito Cereno"; Harriet Beecher Stowe, "Dred"; Antonio Castro Alves, "The Slaves".
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.

AS.060.349. Clint Eastwood, Race, and the American Western. 3.0 Credits.
Drawing from the body of work reflecting the Hollywood gunfighter and outlaw folk-hero Clint Eastwood, the course will investigate American cinematic representations of slavery (and more specifically its absence), the Civil War and racial formation along the United States’ southwestern frontier in films produced from the 1950s through the contemporary period. A focus on the cultural icon Clint Eastwood enables a close examination of American cinematic fantasies of the frontier, frontier violence and the desire to escape or erase the tensions of race and slavery that have deeply permeated the American cultural consciousness, particularly the creation of American masculine ideals. The course will also take decided note of the national shift from liberal “Great Society Programs” of the 1960s to the conservative “neoliberal” social and cultural ideals in the 1980s and 1990s. Our purpose is to consider the organization and reformation of hegemonic power by way of the complex morality play the western film evokes, typically considering the interstitial geographies between civilization and savagery, belonging and alienation, and metropolitan and colonial outpost. We will privilege in our discussions the contested frontiers of racial dominion. The curriculum is complicated by several significant points of departure from the traditional category of the Hollywood-based American western: a film to frame the question of colonialism and resistance, as well as examples of black cinematic efforts re-drawing boundaries of the racial frontier. (Are they formed at the Caribbean, the easternmost littoral? The postindustrial city? Do they correspond to the romance of organized crime and its fantasy of empire?)
Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

AS.060.353. World Literature in Theory and Practice. 3.0 Credits.
This course takes stock of how the current hot topic of “world literature” has evolved from Immanuel Wallerstein’s work on world-systems theory over the course of the last three decades. We will read work by a wide range of literary critics engaged with the topic of world literature, including Franco Moretti, Pascale Casanova, David Damrosch, Emily Apter, and Alex Beecroft, as well as major “world” novels by Herman Melville, Amitav Ghosh, and Chimamanda Adichie. Students will also be introduced to critical approaches that offer a conceptual alternative to the world literature framework, for example, Edward Said’s ideas on worldliness and contrapuntalism, Gaston Bachelard’s phenomenology of the home, Fredric Jameson’s concept of cognitive mapping, and Eric Hayot’s work on literary “world-creation.” We will ask just how broadly the field can be defined before it loses its critical cohesion. In other words, does world literature exist?
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.356. Gordimer and Coetzee: Politics and Form. 3.0 Credits.
A comparative study of major works by the South African Nobel Laureates Nadine Gordimer and J.M. Coetzee. Special attention to critical essays by both writers about each other, as well as about issues of shared historical and literary concern. Topics will include the role of the public intellectual in apartheid-era South Africa, competing scales of literary reception and evaluation (e.g. national, international, and universal), and the relationship between politics, form, and genre.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.
writing intensive. area: humanities
instructor(s): j. jackson
contextualization. among others. we'll pay some attention, too, to critical trends and developments. for instance, "the song of lawino" (okot p'bitek); or "the promised land" (grace "chaka" (thomas mofolo); "the wrath of the ancestors" (a.c. jordan); "african literature"? the descriptive and institutional limitations of "african literature"? what is an "environment," socially speaking? how have pipelines, animals, language, and folklore, he also thought of himself as part of the great tradition of african american, european, and classical literature, from homer through joyce. he quickly set to work on a second novel dealing with the assassination of a racist senator during the height of the civil rights movement, but he came to the end of his life in 1994 without having completed the novel to his own satisfaction. this massive book, which appeared posthumously in a very abbreviated form as juneteenth and more recently in the much longer three days before the shooting, reveals the work of a master while at the same time it leaves critics and readers with an exceptional puzzle: what would his final intention have been? why was he unable to complete the novel? how does it speak to the key issues of african american identity, freedom, and the african ideal that ellison grappled with all his life? at the same time that he worked on his second novel, ellison became one of the most prolific and important essayists of the twentieth century, and wrote brilliantly about american race relations from the era of segregation through the twentieth century. even as he was celebrated by the literary establishment, however, ellison at times found himself as odds with younger black writers and thinkers who felt that public activism, not just artistic greatness, was required of the african american writer. using ellison as a lens through which to see the course of american race relations from slavery to the present, the course will include study of all of ellison's major work: the short stories collected in "flying home"; "invisible man"; the essays collected in "shadow and act" and "going to the territory", as well as others; and "three days before the shooting". instructor(s): e. sundquist
area: humanities
writing intensive.

as.060.366. ellison. 3.0 credits.
this course reaches beyond the much-taught postcolonial african realist canon to explore less-studied, more formally challenging works from across the continent, focusing on long-form prose and poetry. while texts will be clearly placed in an historical context, the emphasis in our readings will be on the inception, evolution, and intermingling of literary genres. how do seminal moments in african literary history complicate our received understandings of periodicity, mimesis, and the relation among selfhood, collectivity, and narration? what possibilities exist for theorizing african literature as a corpus, and what, conversely, are the descriptive and institutional limitations of "african literature"? primary texts will include "ethiopia unbound" (j.e. casely hayford); "chaka" (thomas mofolo); "the wrath of the ancestors" (a.c. jordan); "song of lawino" (okot p’bitek); and "the promised land" (grace ogot), as well as poetry by shaaban bin robert and h.i.e. dhlomo, among others. we'll pay some attention, too, to critical trends and contextualization.
instructor(s): j. jackson
area: humanities
writing intensive.

as.060.378. advanced introduction to african literature. 3.0 credits.
this course reaches beyond the much-taught postcolonial african realist canon to explore less-studied, more formally challenging works from across the continent, focusing on long-form prose and poetry. while texts will be clearly placed in an historical context, the emphasis in our readings will be on the inception, evolution, and intermingling of literary genres. how do seminal moments in african literary history complicate our received understandings of periodicity, mimesis, and the relation among selfhood, collectivity, and narration? what possibilities exist for theorizing african literature as a corpus, and what, conversely, are the descriptive and institutional limitations of "african literature"? primary texts will include "ethiopia unbound" (j.e. casely hayford); "chaka" (thomas mofolo); "the wrath of the ancestors" (a.c. jordan); "song of lawino" (okot p’bitek); and "the promised land" (grace ogot), as well as poetry by shaaban bin robert and h.i.e. dhlomo, among others. we'll pay some attention, too, to critical trends and contextualization.
instructor(s): j. jackson
area: humanities
writing intensive.

as.060.387. black empire. 3.0 credits.
this course examines the transnational visions of black empire as articulated and framed by black thinkers, writers, and visual artists around the world, roughly between 1850 and 1950. we will consider how both individuals and groups (such as the united negro improvement association) responded to imperialist maneuvers through discourses of ethiopianism, pan-africanism, and anti-colonialism, and how these discourses interacted with one another in surprising ways, ways that reveal the black world's simultaneous attraction to and rejection of the imperial model in the nineteenth and twentieth centuries. our reading will include novels, poems, essays, and critical texts—at least two of which share a title with this course—by w. e. b. du bois, pauline e. hopkins, sutton e. griggs, j. a. rogers, langston Hughes, george s. schuyler, claire mckay, brent hayes edwards, paul gilroy, wilson jeremiah moose, michelle ann stephens, and others.
instructor(s): n. nurhussein
area: humanities
writing intensive.

as.060.617. black print culture.
students interested in black print culture will engage in intensive archival research, both collaborative and individual, using the sheridan library's rare book and manuscript collections. texts include poems, printed lectures, pamphlets, novels, periodicals, ephemera, correspondence, etc., alongside relevant critical and theoretical reading.
instructor(s): n. nurhussein
area: humanities
writing intensive.

film and media studies
as.061.328. gangster films. 3.0 credits.
the bad guy as hero from little caesar to goodfellas. film screenings thursday 7:30-10:00 pm, sunday 7:00-9:30 pm. lab fee: $40.
instructor(s): l. bucknell
area: humanities.

as.061.369. the 1930s in jazz, film, and poetry. 3.0 credits.
the 1930s in jazz, film, and poetry will focus on three art forms: jazz, film, and poetry, both separately and in conversation with each other during a decade of political, economic, technological, and cultural upheaval. a decade after the invention of amplifiers and public address systems, advances in sound recording and synchronized sound revolutionized film and recording arts. jazz musicians, filmmakers, and poets collaborated on innovative and radical projects, often funded by the new deal federal writers project. team-taught by faculty in film and media studies, the department of jazz (peabody), and the center for african studies, this course will bring together students from peabody and the krieger school of arts & sciences to engage with issues of art, culture, and politics during a turbulent decade.
prerequisites: as.061.140 or as.061.141
instructor(s): h. robbins
area: humanities.

anthropology
as.070.109. introduction to environmental anthropology. 3.0 credits.
what is an "environment," socially speaking? how have pipelines, animals, conservation, and capitalism shaped the way we talk about "nature" and "society" in the present day? this course examines the mutual transformation of humans and their environments through ethnography, environmental history, cultural and political ecology, human geography, and social theory.
instructor(s): t. ozden-schilling
area: humanities, social and behavioral sciences.
AS.070.202. Economic Anthropology. 3.0 Credits.
How do the abstract principles of economics play out in a diversity of times and places? This course surveys anthropological research on the social organization of labor, the political institutions that underlie wealth and property, and the cultural meanings of money and commodities. Through these topics, we will look at enduring debates about the rationality of markets and the nature of capitalism.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

AS.070.222. Africa in the 21st Century. 3.0 Credits.
Rapid urbanization has created new needs, occupations, entertainments, etc., outside the “formal sector”. We use anthropological studies, African literature, film and the press on-line to understand making a living.
Instructor(s): J. Guyer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

AS.070.233. Africa as Laboratory. 3.0 Credits.
Africa, as anthropologists have noted, has long been a “laboratory of the future.” By tracing the intersections of technology and politics, this class considers the various experiments in oppression and liberation that have unfolded within it. Following a broad historical arc, we begin with colonial medicine, racial science, and urban planning; move to national infrastructures and postcolonial resource extractions; and finally consider contemporary African engagements with consumer technology.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

AS.070.241. African Cities. 3.0 Credits.
Over the past two decades, African cities have absorbed rapid population increase without accompanying economic growth. Students will review the major challenges of this mode of urbanization and explore the vibrant ways residents have sought to meet them. Following anthropology’s commitment to lived experience, we will track these issues through the twists and turns of everyday life, and consider what they may say about urbanity more broadly in the 21st century. Topics include livelihood, the built environment, conflict and membership, and popular culture.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

AS.070.294. Political Anthropology of Africa. 3.0 Credits.
The course will explore classical and contemporary ethnographies of the political in Africa, examining how their authors address issues of power, hierarchy and symbol. We will study various articulations of state, ethnicity and community that are analyzed by observing relations between power and resistance or between law, economy and violence through war, custom and ritual. The seminar will also address the way in which Africa has been constituted as a key source of the sub-field of political anthropology through colonial trajectories, postcolonial detours and the political imagination of the past and the future.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences

AS.070.302. Crisis and Futurity: New Ethnographies of Africa. 3.0 Credits.
"Africa Rising” or “The Hopeless Continent?” Within the span of a decade, The Economist magazine famously declared each to be true. In this class we turn to the genre of ethnography, with its focus on lived experience and critical nuance, to make sense of this seeming contradiction. We explore the themes of crisis and futurity through new works by Mbembe, De Boeck, Obarrio, and others.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

AS.070.318. The Atlantic World. 3.0 Credits.
This seminar explores the formation of the South Atlantic through a reading of historical and ethnographic texts. We examine the making of history and culture as contentious fields of struggle.
Instructor(s): A. Angelini
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

This seminar will address contemporary questions of state and citizenship in the light of colonial and imperial dynamics at the beginning of the twenty-first century: transnational and national sovereignty in relation to local configurations of law, capital and political violence; processes of subsumption, extraction and financialization. Authors include Negri, Arrighi, Harvey, Chakrabarty, Mbembe, Mamdani, Chatterjee, Coronil, Dussel.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences

History

AS.100.108. Making America: Black Freedom Struggles to 1896. 3.0 Credits.
From slave revolts on the West African coast to national conventions and civil war, people of African descent have defined freedom and struggle in terms of kinship, diasporic connection, and fighting antiblack violence. This course explores the arc of that history and its role in the making of America.
Instructor(s): J. Johnson
Area: Humanities, Social and Behavioral Sciences

AS.100.109. Making America: Slavery, Violence, and the Coming of the Civil War. 3.0 Credits.
An examination of violence - primarily racial and political - in the decades between the American Revolution and Civil War (1789 to 1861).
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

AS.100.122. Introduction to History of Africa (since 1880). 3.0 Credits.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences
Writing Intensive

AS.100.123. Introduction to African History: Diversity, Mobility, Innovation. 3.0 Credits.
An introduction to African history with emphasis on diversity, mobility, and innovation. Considers both early and modern times.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive
AS.100.202. Conflict and Co-Existence: The Early Modern Mediterranean. 3.0 Credits.
This course explores the dynamic and fluid world of the early modern Mediterranean (1453-1650), where Christians, Jews, and Muslims met, fought, traded with, and enslaved each other.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.203. Freshman Seminar: From Columbus to Calypso: The Caribbean and the Wider World. 3.0 Credits.
This course examines the history of the Caribbean and how five hundred years of colonization, slavery, piracy, rebellion, and revolution have shaped the politics and culture of the islands today.
Instructor(s): L. MacDonald
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.206. Freshman Seminar: Law, Society, and Power in America, 1500-1877. 3.0 Credits.
This course examines the relationship between law, governance, and social structures in America between the start of European settlement and the era of the Civil War. Topics will include Native American and African land claims, the regulation of family life, economic and commercial disputes, and the legal regimes of race and slavery. Throughout, we will consider both the aims of governing officials and how ordinary men and women maneuvered within the legal system. Freshman only.
Instructor(s): S. Damiano
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.205. Freshman Seminar: Health, Healing, and Medicine in Africa. 3.0 Credits.
A freshman seminar introducing students to the history of health, healing, and forms of medical practice in Africa over the last two centuries.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.211. Freshman Seminar: American Slavery. 3.0 Credits.
This seminar explores the history of American slavery, tracing developments over time and across space, probing the impact of this iniquitous and dynamic institution on societies and individuals, and examining a variety of sources that historians use to construct their narratives. Freshman only
Instructor(s): P. Morgan
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.255. The Haitian Revolution in World History. 3.0 Credits.
This introductory seminar examines the revolution that transformed the slave colony of Saint-Domingue into the first black republic and second independent nation in the Americas, and its repercussions around the world. Non-Majors welcome.
Instructor(s): N. Marvin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.282. Race & Power in Modern South Africa. 3.0 Credits.
South African history from 1800 to the present, with focus on the rise and fall of the apartheid racial state.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.311. National Pastimes: Sports, Culture, and American History. 3.0 Credits.
National Pastimes examines the development of sports in the United States over the course of the 20th century with a particular interest in the relationship between sports and politics as well as issues of race, gender, sexuality and class.
Instructor(s): A. Davis
Area: Humanities, Social and Behavioral Sciences.

AS.100.316. American Foreign Policy in the Age of Human Rights. 3.0 Credits.
American Foreign Policy in the Age of Human Rights examines competing narratives about the origins of modern international human rights, and explores how those narratives historically informed American foreign policy from the American Revolution up to the present, with an emphasis on the twentieth century.
Instructor(s): K. Sohaskey
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.320. Writing U.S. Empire. 3.0 Credits.
Attends to the composition and interpretive problems raised by studying the history of American imperialism, 1880s-1930s.
Instructor(s): N. Connolly
Writing Intensive.

AS.100.321. From Ferguson to Cape Town: The Global Black Freedom Struggle since Slavery. 3.0 Credits.
This seminar underscores the global and historical dimensions of the black freedom struggle through a series of case studies spanning North America, Africa and Latin America. Major themes addresses include race, diaspora, and movement(s) from slavery to the present.
Instructor(s): J. Levy
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.323. America in the 1960s. 3.0 Credits.
The years between 1959, when the course begins, and 1971, when it ends, were tumultuous and divisive. This course explores the political, racial, and cultural struggles of a half century ago.
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.334. Billie Holiday and American Culture. 3.0 Credits.
A course examining introducing students to the life, times and music of Billie Holiday. We will read biographies, autobiographies, novels, and listen to music.
Instructor(s): L. Jackson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.343. Diaspora, Nation, Race, and Politics. 3.0 Credits.
For millions of people across the globe, political fate in the 20th century was defined at the intersection of diaspora, race, and nation — and this may be true in the 21st century as well. This course, a collaborative effort involving a historian and a political scientist, explores the parallels and divergences in the deployment of these terms in nationalist and transnational mobilization, literature and aesthetics, and group identity formation in Eastern Europe, Africa and the New World of the Americas. Set against the backdrop of the fall of significant empires in the late 19th and early 20th centuries, we will explore themes of migration, human rights, the nation-state system, and racism through history, political sociology, and political and social theory. We will pay particular attention to the theoretically exemplary Jewish and Black experiences of diaspora, race, and nation, engaging both with how those experiences were specially shaped by the imposition of national and racial logics and with Black and Jewish politics and thought in relation to those categories.
Instructor(s): K. Moss; M. Hanchard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.356. W.E.B. Du Bois and the Problem of the Color-Line. 3.0 Credits.
This seminar will introduce students to the ideas and legacy of the renowned American scholar, journalist, and activist, W.E.B. Du Bois (1868-1963), asking students to locate Du Bois in his historical context and in our own. Through readings and discussions of his key works in various forms, we will assess Du Bois's impact on major debates in American politics, African-American affairs, and academic disciplines like sociology and history. We will track changes in Du Bois's thinking over time, including in his views of racism, class, gender, liberalism, radicalism, imperialism, and war. Finally, we will consider the ways in which Du Bois’s work continues to shape our understanding of these issues and debates in contemporary American society.
Instructor(s): A. Brann
Area: Humanities.

AS.100.358. Black Code Studies: Black History and Digital Media. 3.0 Credits.
This course explores doing histories of people of African descent in an age of digital and social media. The focus will be on African-descended communities in the United States, but content will range across time and space. Examples include: West African digital art communities; the use of slave trade databases to write Caribbean history; and the use of social media in social justice organizing from Paris to Baltimore. Students will explore questions of blackness, race, ethnicity, sex and sexuality, violence and justice while creating digital content using platforms like Wordpress, Omeka, Twitter, and Tumblr. Students will be evaluated on their acquisition of African American and Afro-Diasporic history; their knowledge of digital and social media platforms; and their ability to creatively and accurately relate the histories of blackness and black people to their representation and discussion online.
Instructor(s): J. Johnson
Area: Humanities, Social and Behavioral Sciences.

AS.100.382. Early Modern African Atlantic. 3.0 Credits.
This course examines the history of West and Central Africa and its diasporic people and cultures during the early modern period (c. 1400-1750) in disparate parts of the Atlantic world, including Europe, Latin America, the Caribbean, and Anglo-America. Themes include: West and Central African political and religious cultures; trans-Atlantic slavery; African Christianity; and the question of cultural survivals.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.385. Mobility and Encounter in the Medieval Indian Ocean. 3.0 Credits.
This seminar discusses forms of mobility and exchange- trade and travel, conquest and religious transformation, diasporas and migration, the spread of practices and technologies across the Indian Ocean from the 8th to 16th centuries.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.399. Decolonization and Citizenship in Africa, 1945-2015. 3.0 Credits.
Critically explores issues of decolonization and citizenship in Africa from WWII to the present. Emphasis on political inclusion and exclusion, and violence, fostered by nationalist movements and postcolonial African governments.
Instructor(s): P. Larson
Area: Humanities
Writing Intensive.

AS.100.403. Law & Custom in Colonial Africa. 3.0 Credits.
Examines how colonial rule transformed African legal systems, while Africans used European law for political resistance and personal gain. Research project based on colonial South African court records.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences.
AS.100.411. Readings in the History of Public Health in the 20th and 21st Centuries. 3.0 Credits.
The students will read major and some minor works in the history of global public health and will each develop their own concept of how and why the major institutions, professions, and practices associated with public health have evolved over the past long century. To help the students focus on their ideas, they will write three essays on particular aspects of the history.
Instructor(s): L. Galambos
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.445. African Fiction as History. 3.0 Credits.
An exploration of Modern African history through the African historical novel.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.486. Jim Crow in America. 3.0 Credits.
Explores the history of legalized racial segregation in the United States from the nineteenth and twentieth centuries.
Instructor(s): N. Connolly
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Near Eastern Studies
AS.130.126. Gods and Monsters in Ancient Egypt. 3.0 Credits.
To provide a basic introduction to Egyptian Religion, with a special focus on the nature of the gods and how humans interact with them. We will devote particular time to the Book of the Dead and to the “magical” aspects of religion designed for protective purposes.
Instructor(s): R. Jasnow
Area: Humanities.

AS.130.203. Archaeology of Africa: From Human Origins to the Emergence of Civilizations. 3.0 Credits.
This course examines Africa's ancient past from the emergence of biologically modern humans, ancient hunter-gatherers, the earliest animal herding and farming populations, to cities and civilizations. While Egypt plays an undeniably central role in world history, this course concentrates in particular on ancient geographies other than Egypt.
Instructor(s): M. Harrower
Area: Humanities.

AS.130.400. Introduction To Middle Egyptian. 3.0 Credits.
Introduction to the grammar and writing system of the classical language of the Egyptian Middle Kingdom (ca. 2055-1650 B.C.). In the second semester, literary texts and royal inscriptions will be read. Course meets with AS.133.600.
Instructor(s): R. Jasnow
Area: Humanities.

AS.131.613. Archaeology of Africa: From Human Origins to the Emergence of Civilizations.
This course examines Africa's ancient past from the emergence of biologically modern humans, ancient hunter-gatherers, the earliest animal herding and farming populations, to cities and civilizations. While Egypt plays an undeniably central role in world history, this course concentrates in particular on ancient geographies other than Egypt.
Instructor(s): M. Harrower
Area: Humanities.

AS.133.611. Middle Egyptian Texts.
In this course we read a variety of Middle Egyptian hieroglyphic compositions and documents. Knowledge of Middle Egyptian Required.
Instructor(s): B. Bryan; R. Jasnow
Area: Humanities.

History of Science Technology
AS.140.163. Jungle Doctors: Medical Missions in Africa from David Livingstone to Paul Farmer. 3.0 Credits.
Freshman seminar using a variety of primary and secondary sources, students will explore the motivations and activities of expatriates practicing medicine in Africa from the 19th century to the present.
Instructor(s): J. Cummiskey
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.328. Science and Technology in Slave Regimes. 3.0 Credits.
What does science and technology look like in slave regimes? This seminar explores this question from a trans-national perspective by comparing cases in the Antebellum US, Cuba, Brazil and other countries.
Instructor(s): M. Portuondo; R. Kargon
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.379. Health and the City: Urban Public Health In Historical Perspective. 3.0 Credits.
This course examines the history of cities as spaces of public health concern since the nineteenth century, and seeks to understand how social, political, and economic contexts have shaped urban public health interventions.
Instructor(s): E. Anders
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Philosophy
AS.150.404. The Idea of Power. 3.0 Credits.
The idea of Power surveys seminal texts in the history of political thought on the nature, promise, and dangers of political and social power; it also critically engages contemporary texts on race and gender power relations.
Instructor(s): C. Lebron
Area: Humanities.

AS.150.440. The Making of Black Lives Matter. 3.0 Credits.
This course explores the history of black thought that informs the ethics of the contemporary movement for black lives.
Instructor(s): C. Lebron
Area: Humanities
Writing Intensive.
**Economics**

**AS.180.252. Economics of Discrimination. 3.0 Credits.**
This course examines labor market discrimination by gender, race and ethnicity in the United States. What does the empirical evidence show, and how can we explain it? How much of the difference in observed outcomes is driven by differences in productivity characteristics and how much is due to discrimination? How do large corporations and educational institutions respond; and what can we learn from landmark lawsuits? The course will reinforce skills relevant to all fields of applied economics, including critical evaluation of the theoretical and empirical literature, the reasoned application of statistical techniques, and analysis of current policy issues. Seniors by Permission Only.

**Prerequisites:** AS.180.102  
Instructor(s): B. Morgan  
Area: Social and Behavioral Sciences  
Writing Intensive.

**AS.180.355. Economics of Poverty/Inequality. 3.0 Credits.**
This course focuses on the economics of poverty and inequality. It covers the measurement of poverty and inequality, facts and trends over time, the causes of poverty and inequality with a focus on those related to earnings and the labor market, and public policy toward poverty and inequality, covering both taxation and government expenditure and programs. By the nature of the material, the course is fairly statistical and quantitative. Students should have an intermediate understanding of microeconomic concepts. Basic knowledge of regression analysis is also helpful.

**Prerequisites:** AS.180.301  
Instructor(s): R. Moffitt  
Area: Social and Behavioral Sciences.

**Political Science**

**AS.190.284. Classics of Political Theory. Political Freedom. 3.0 Credits.**
This course investigates core questions of what constitutes political freedom, what limits on freedom (if any) should be imposed by authority, and the relationship between freedom, responsibility and political judgment. Spanning texts ancient, modern and contemporary, we shall investigate how power inhabits and invigorates practices of freedom and consent. Among the questions we will consider: Can we always tell the difference between consent and coercion? Are morality and freedom incompatible? Is freedom from the past possible? By wrestling with slavery (freedom’s opposite) we will confront the terrifying possibility that slavery can be both embodied and psychic. If our minds can be held captive by power, can we ever be certain that we are truly free? The political stakes of these problems will be brought to light through a consideration of issues of religion, gender, sexuality, civil liberties, class and race.

Instructor(s): P. Brendese  
Area: Social and Behavioral Sciences.

**AS.190.311. Disposable People: Race, Immigration and Biopolitics. 3.0 Credits.**
This course will explore theories and practices of race and immigration in order to illuminate the proliferation of populations regarded as disposable in contemporary politics. We will pay special attention to the contestable criteria used to determine eligibility for membership in the human race. We shall also examine how political power influences the relays between citizenship status and those whose lives are worthy of protection, and those who should be allowed to die.

Instructor(s): P. Brendese  
Area: Social and Behavioral Sciences.

**AS.190.339. American Racial Politics. 3.0 Credits.**  
Recommended Course Background: AS.190.214  
Instructor(s): L. Spence  
Area: Social and Behavioral Sciences.

**AS.190.340. Black Politics I. 3.0 Credits.**
This course is a survey of the bases and substance of politics among black Americans and the relation of black politics to the American political system up to the end of Jim Crow. The intention is both to provide a general sense of pertinent issues and relations over this period as a way of helping to make sense of the present and to develop criteria for evaluating political scientists’ and others’ claims regarding the status and characteristics of black American political activity.

Instructor(s): L. Spence  
Area: Social and Behavioral Sciences.

**AS.190.342. Black Politics II. 3.0 Credits.**  
Recommended Course Background: AS.190.340.  
Instructor(s): L. Spence  
Area: Social and Behavioral Sciences.

**AS.190.346. Power and Democracy in the American City. 3.0 Credits.**
How do race and class intersect to shape how democracy works in American cities? In this innovative course students will learn about urban citizenship, authority, and activism using Baltimore as a case. The class, co-taught with Baltimore organizers, will use a community based learning approach.

Instructor(s): L. Spence  
Area: Social and Behavioral Sciences  
Writing Intensive.

**AS.190.365. Black Politics: Black Lives Matter. 3.0 Credits.**
Over the past two years the #blacklivesmatter movement has transformed the discussion about policing in American cities. In this course we will examine the broad movement against police brutality through the lens of black politics.

Instructor(s): L. Spence  
Area: Social and Behavioral Sciences  
Writing Intensive.
AS.190.380. The American Welfare State. 3.0 Credits.
This course analyzes the distinctive US welfare state in historical and comparative perspective. We begin with a survey of the policy context, an historical overview from the poorhouses through the Great Society, and a tour of welfare states across the rich democracies. We then survey developments – and explain the actual workings of policy – across jobs, education, welfare, pensions, and health care. We explore the institutional and political factors behind their divergent trajectories through conservative revival and the age of Obama. Students will write a seminar paper exploring policy development over time in a program or area of their choosing. Enrollment restricted to Social Policy minors only. Prerequisites: Students may take AS.190.380 or AS.360.380, but not both.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.384. Urban Politics & Policy. 3.0 Credits.
An analysis of public policy and policy-making for American Cities. Special attention will be given to the subject of urban crime and law enforcement, poverty and welfare, and intergovernmental relations. Cross-listed with Africana Studies
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.385. Urban Politics and Policy. 3.0 Credits.
An analysis of public policy and policy-making for American Cities. Special attention will be given to the subject of urban crime and law enforcement, poverty and welfare, and intergovernmental relations. Cross listed with Africana Studies.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.391. Time to Kill: Race, Punishment, Death and Desire. 3.0 Credits.
This course examines the role of race in determining who deserves to be punished, the timing and occasions of punitive action and how long punishment should endure. Key to our inquiry is how racialized presumptions about human desire might justify punitive logics of power. The class explores inequalities in the distribution of punishment and death in order to illuminate how race shapes questions of whose time is more valuable, who lives and who dies, and ultimately whose lives count as human.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences.

AS.190.404. Race and Debt: Living on Borrowed Time. 3.0 Credits.
This is an advanced undergraduate seminar that explores how racial stigma functions as a marker of being always already in debt. In view of the legacies of settler-colonialism, imperialism and chattel slavery, how is it that those from whom so much has been taken are nevertheless regarded as perpetually in debt? We shall examine the moral, economic and racialized logics of power through which a range of political subjects come to be regarded as ungrateful “takers” as opposed to “makers,” and owing a debt to society. In so doing, we will investigate how temporality functions as a tool of power by considering how the indebted are made vulnerable to precarity, discipline, and disposability—in effect, forced to live life on borrowed time.
Instructor(s): P. Brendese
Writing Intensive.

AS.190.479. Imag(in)ing Cities. 3.0 Credits.
Cities exert a substantial degree of control over American life. Throughout the 20th and early years of the 21st Century they have been centers of industry, of social change, of political change. And in part because of their status, scholars have begun to theorize about cities. The purpose of this class is to interrogate these theories through a filmic lens. Students will be exposed to readings and then in the second half of the semester, to films about cities that implicitly and explicitly speak to and about these theories. Some coursework in urban studies preferred, though not necessary.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.191.389. The Politics of Race and Ethnicity in the Postcolonial Society. 3.0 Credits.
The postcolonial society offers a unique terrain for the study of comparative racial politics, providing a setting for which racial and ethnic politics often take place between predominately non-white groups. In this course, students will examine contemporary understandings of the concepts of race and ethnicity and how they are deployed politically in the postcolonial society, enabling students to make deeper explications about the relationship between race, ethnicity and national inclusion as global phenomena that are the persistent and widespread legacies of colonialism, nationalism and white supremacy. Specifically, students will become familiar with the processes of colonization and decolonization—as well as postcolonial theories of resistance—that structure group politics today, drawing upon theoretical sources from Africa, Asia and the Caribbean. These theoretical and historical tools will be used to study racial and ethnic politics across a range of postcolonial cases, including Indonesia, Mauritius, Fiji, Trinidad, Colombia and Brazil.
Instructor(s): E. Thornton
Writing Intensive.

German Romance Languages Literatures
AS.210.391. Advanced Portuguese Language & Literature I. 3.0 Credits.
This third-year course focuses on reading, writing, and oral expression. Under the supervision of the instructor, students will read two complete works by major Brazilian, Portuguese, and/or Afro-Portuguese writers each semester, followed by intense writing and oral discussion on the topics covered. Grammar will be reviewed as necessary. All classes are conducted in Portuguese. Prereq: 210.278 or placement test. Permission required
Prerequisites: AS.210.278 or equivalent score on placement test or instructor approval.
Instructor(s): M. Spiker
Area: Humanities
Writing Intensive.
AS.211.319. *¡Salsa! The Afro-Antillean song*. 3.0 Credits.

¡Salsa! The Afro-Antillean song surveys Caribbean music in an international Spanish-speaking context. As a language course, it reviews grammar and instills vocabulary acquisition through the close analysis of the biggest hits of salsa from the past one hundred years. On completion of this course the student will have developed the ability to read and critically discuss music and its history in the Spanish-speaking Caribbean and will have examined cultural roots, market dominance, and media crossovers in the musical universe of the Spanish-speaking archipelago of the Antilles. In completing the course's final project students will apply, synthesize, and reflect on what has been covered in the class by creating a professional dossier individualized to their own personal musical interests. Concepts learned in this course will be directly applicable to careers linked to intercultural and international relations while also apply to multiple careers in media, music industry and dance. There is no final exam. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session.

Instructor(s): M. Ramos
Area: Humanities.

AS.211.341. *Power and Resistance in French Political Thought*. 3.0 Credits.

Even as a strong, divine-right monarchy emerged in France, following the Renaissance wars of religion, rebellious French thinkers never stopped questioning the foundations of power. They focused critically not only on the claims of authority issuing from the top, but also on the submissiveness of the governed and the reach of propaganda. This course examines how power shapes minds and bodies, from absolutism to the Revolution, to democratic laïcité. Readings include works by La Boétie, Montaigne, Loyseau, Bayle, Rousseau, Saint-Just, Maistre, Tocqueville, Foucault, Lefort, Rancière and the Assemblée Nationale. Readings and discussion in English.

Instructor(s): E. Russo
Area: Humanities.

AS.211.349. *Readings in Fiction: Caribbean Voices*. 3.0 Credits.

This course examines the new wave of social protest and popular uprisings in contemporary Africa through the interconnected themes of land, labor and environmental struggles. Attention will be placed on the uprisings in contemporary Africa. The course examines the new wave of social protest and popular uprisings in contemporary Africa through the interconnected themes of land, labor and environmental struggles. Attention will be placed on the early 21st century.

Instructor(s): E. Gonzalez
Area: Humanities
Writing Intensive.


We will study the visual and textual arts, cinema, political culture, and blogosphere; reaching back to the first phases in the building of the revolutionary state apparatus and its sovereign mandate. Taught in Spanish.

Prerequisites: AS.210.312[C]
Instructor(s): E. Gonzalez
Area: Humanities.


Readings from colonial times to the present from three cultural legacies, Hispanic, English and French. Centered on slavery and its sequels.

Instructor(s): E. Gonzalez.

Writing Seminars


In this Community-Based Learning course, students will explore poetry of social and political engagement in partnership with high-school age writers from Writers in Baltimore Schools. Participants will put learning into practice by organizing community conversation, reflection, and collaboration. Participation in some events outside of class time will be required.

Instructor(s): D. Malech
Area: Humanities
Writing Intensive.


Caribbean history is reflected in the literature of emigration and collapse of empire. We'll study novels by Naipaul, Rhys, and other 20th century authors.

Instructor(s): W. Biddle
Area: Humanities
Writing Intensive.

Sociology

AS.230.205. *Introduction to Social Statistics*. 4.0 Credits.

This course will introduce students to the application of statistical techniques commonly used in sociological analysis. Topics include measures of central tendency and dispersion, probability theory, confidence intervals, chi-square, anova, and regression analysis. Hands-on computer experience with statistical software and analysis of data from various fields of social research. Special Note: Required for IS GSCD track students.

Prerequisites: Statistics Sequence restriction: students who have completed any of these courses may not register: EN.550.211 OR EN.550.230 OR EN.550.310 OR EN.550.311 OR EN.550.413 OR EN.550.420 OR EN.550.420 OR EN.550.420 OR EN.550.420 OR EN.560.435 OR AS.280.345 OR AS.200.314 OR AS.200.315 OR EN.560.348; Statistics Sequence Restriction: Students who have completed EN.550.111 OR EN.550.113 may not enroll.

Instructor(s): J. Grigg
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.


The course examines the new wave of social protest and popular uprisings in contemporary Africa through the interconnected themes of land, labor and environmental struggles. Attention will be placed on the early 21st century.

Instructor(s): R. Jacobs
Area: Social and Behavioral Sciences.

AS.230.244. *Race and Ethnicity in American Society*. 3.0 Credits.

Race and ethnicity have played a prominent role in American society and continue to do so, as demonstrated by interracial and interethnic gaps in economic and educational achievement, residence, political power, family structure, crime, and health. Using a sociological framework, we will explore the historical significance of race and its development as a social construction, assess the causes and consequences of intergroup inequalities and explore potential solutions.

Instructor(s): M. Greif
Area: Social and Behavioral Sciences.
AS.230.265. Research Tools for Global Sociology and Development. 3.0 Credits.
This course will introduce students to a range of software programs that are critical for conducting social scientific research in the 21st century. Students will develop competency in the use of computer programs for statistical analysis, database management, the creation of maps and timelines, and the presentation of research reports. The course uses examples from ongoing social science faculty research projects at Johns Hopkins on global inequality and international development. Required for GSCD track students. Course previously titled "Research Tools and Technologies for the Social Sciences"
Instructor(s): M. Kang
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.230.316. African American Family. 3.0 Credits.
This course is an examination of sociological theories and studies of African-American families and an overview of the major issues confronting African-American family life. The contemporary conditions of black families are explored, as well as the historical events that have influenced the family patterns we currently observe. Special attention will be given to social policies that have evolved as a result of the prominence of any one perspective at a given point in time.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences

AS.230.322. Race, Racism & Racial Privilege. 3.0 Credits.
This course will examine the concepts of race, racism, racial privilege in contemporary America, and the West in general. Examples from other countries will be integrated as well. Historical contexts such as the colonialism, the Civil War and Reconstruction, the Civil Rights movement, and the post Civil Rights era will help to provide an understanding of the social, political, economic, and cultural forces processes that have constructed and shaped the concepts of race and the racialized subject over time.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.357. Baltimore and Beyond. 3.0 Credits.
This course uses the city of Baltimore as a lens through which to explore issues of urban inequality. We will focus on Baltimore's history of racial segregation and concentrated poverty, and its effect on the social and economic well-being of the city and its residents, with attention to education, employment, health and crime. Students will learn how to employ Census data, GIS approaches, and sociological research to inform questions about population change, inequality and the distribution of resources across the city and metropolitan region. Students will also work on one or more policy relevant studies based in Baltimore, including: a project on abandoned and vacant housing, a desegregation intervention, and a longitudinal study of inner city youth. Finally, students will become familiar with Baltimore City’s programs and policy approaches to addressing the city’s most pressing problems, and will design innovative and effective and innovative solutions as part of their course assignments. Enrollment restricted to Social Policy minors only.
Prerequisites: Students that took AS.360.357 may not take AS.230.357
Instructor(s): S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.374. Poverty and Public Policy. 3.0 Credits.
This course examines the causes and consequences of U.S. city poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations that have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Enrollment restricted to Social Policy minors only.
Prerequisites: Students that took AS.360.372 may not take AS.230.374.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.381. Sociology of the Middle East and North Africa. 3.0 Credits.
This course takes a sociological approach to the contemporary Middle East and North Africa. Topics include urbanization and demographic change; rentier welfare states and the global political economy of oil; women in higher education and the labor force; the 2011 Arab Spring; conflict in Syria, Libya, and Yemen; Amazigh (Berber) identity in northwest Africa; Israel-Palestine; “Dubai, Inc.” and the sociology of migrant labor; neoliberal Islamic politics in Turkey; cinema and everyday life in Iran; conservative monarchy in Morocco and Saudi Arabia; and the role of the United States in the MENA region. Students will give presentations, write memos, and submit two papers. One aim of the course is to turn students into clear, polished academic writers and thinkers.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences
Writing Intensive.
AS.230.383. Courts, Housing, and the City: A Research Seminar on Social Justice in Baltimore. 3.0 Credits.
This course will join an existing survey of the Housing Court in Baltimore City by the Public Justice Center (PJC) of Maryland to examine the role and process of evictions in the Baltimore civil litigation system. The course will examine the history of housing in Baltimore and the changing role of the courts in housing rights and law from the mid-20th century to the present. Working with the PJC's Human Right to Housing Project, students will be expected to participate in the survey collection process by attending Rent Court and participating in the data collection process, followed by cleaning and analysis of the data. Counts as American Politics/Sociology of the United States for GSCD Track.
Prerequisites: AS.230.205 AND AS.230.265 or permission of instructor
Instructor(s): D. Pasciuti
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.230.385. Schooling, Racial Inequality and Public Policy in America. 3.0 Credits.
After examining alternative explanations for why individuals obtain different amounts and types of educational training, the course focuses on how an individual's family background and race affect his or her trajectory through the educational system. The course covers the specific challenges that have confronted urban schooling in America since the 1960s, including the classic literature on the effects of school and community resources on student achievement as well as the development and later evaluation of school desegregation policies. The course also considers case studies of current policy debates in the US, such as housing segregation and school resegregation, voucher programs for school choice, and the motivation for and consequences of the establishment of state-mandated testing requirements. Throughout the course, emphasis is placed upon the alternative modes of inquiry and writing which opposing scholars, policymakers, and journalists use to address these contentious topics.
Instructor(s): S. Morgan
Area: Social and Behavioral Sciences
Writing Intensive.

Public Health Studies
AS.280.120. Lectures on Public Health and Wellbeing in Baltimore. 1.0 Credit.
An introduction to Urban Health with Baltimore as a case study: wellbeing, nutrition, education, violence and city-wide geographic variation. Lectures by JH Faculty, local government/service providers and advocates.
Instructor(s): P. Leaf
Area: Social and Behavioral Sciences.

Humanities Center
AS.300.327. Introduction to Comparative American Cultures: Obama and Philosophy. 3.0 Credits.
This course will investigate the philosophical as well as theological, juridical and political, and rhetorical and literary backgrounds that have informed and shaped Barack Obama's writings, speeches, and policy strategies leading up to and during his presidency. While paying minute attention to a few selected controversial debates in domestic and international governance and relations, and while discussing the question of Obama's legacy in and after the upcoming elections, our primary focus will be on understanding the curious blend of Christian realism, influenced by the theologian Reinhold Niebuhr, the tradition of American civic republicanism and pragmatism, and Obama's specific brand of post-Civil Rights, if not necessarily post-racial, politics. All these tenets coalesce in a vision and politics that may well be described as one of "deep" pragmatism. Attention will be paid to Obama's early appeal to "simple ideas" and "small miracles," each of them yielding the Biblical and sobered injunction of a "hope against hope." But extensive consideration of his thought and impact in the assessment of biographers and intellectual historians, legal scholars and political theorists, cultural critics and pundits will add to our attempt to understand and take stock of the Obama phenomenon as well.
Instructor(s): H. de Vries
Area: Humanities.

East Asian Studies
AS.310.308. The Frontier in Late Imperial China. 3.0 Credits.
The tremendous expansion of Chinese frontiers during the late imperial period forced the state and those who lived within it to grapple with complex problems of governance, ethnicity, and the geographic extent of "China". Issues and concerns associated with the massive Chinese frontiers have extended into the present; hence, no one can appreciate the current problems plaguing China's northwestern, southwestern, or coastal regions without an understanding of its historical antecedents. This seminar is designed to introduce major scholarly works and theoretical frameworks on the Chinese frontier.
Instructor(s): J. Bandy
Area: Humanities
Writing Intensive.

Interdepartmental
AS.360.372. Poverty and Public Policy. 3.0 Credits.
This course examines the causes and consequences of U.S. urban poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations scholars have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Permission of instructor required.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.
Program in Latin American Studies
AS.361.207. Afro-Latin American Biography. 3.0 Credits.
In this course, we will examine biographical accounts of men and women of African descent in Latin America and in the broader Black Atlantic. These individuals include conquistadors and slaves, saints and sinners, revolutionaries and ordinary people. In their life stories, we will not only examine questions of race, gender, and religiosity that were central to the construction of identity in the early modern Atlantic world, but also the nature of the sources that allow us to tell their stories.
Instructor(s): J. Clark
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Study of Women, Gender, Sexuality
AS.363.336. The Poetics & Politics of Sex: Feminist Separatism & Its Afterlives. 3.0 Credits.
In 1977, feminist theorist Marilyn Frye asked, “What is it about separation, in any or all of its many forms and degrees, that makes it so basic and so sinister, so exciting and so repellent?” Her essay, “Some Reflections on Separatism and Power” was a response to the emergence and persistence in the 1960s of a feminist separatist politics, as well as its many detractors, both from outside the feminist movement and within (many black feminists, for example, critiqued the movement’s essentialism and its positioning of gender and sexuality above considerations of race). Today, Frye’s question still remains a live one; think, for example, of the now commonplace exclamation that one will “move to Canada” (or “leave Earth” as Tina Fey has it) in the face of an ominous political possibility. In a less facetious form, one might consider the separatism latent in the emergence of queer futurity politics, safe space discourse, and a more general pessimism about reform and assimilation as satisfying answers to a continually oppressive status quo. In this course, we will consider the ongoing salience of the idea of separatism, particularly as it is engaged within politics of gender and sexuality.
Instructor(s): N. Dubay
Area: Humanities.

AS.363.417. Internship/Practicum: Critical Theory and the Possibility of Social Justice. 4.0 Credits.
This course combines a weekly seminar with 4 hours per week in a Baltimore social justice organization, coordinated by the JHU Center for Social Concern. Class discussions draw on readings in ethnography and feminist, queer and critical race studies to address topics such as: race, class and gender inequality, neoliberal development, health, institutional violence and politically engaged research.
Instructor(s): A. Krauss
Area: Humanities, Social and Behavioral Sciences.

Program in Museums and Society
AS.389.376. Enslaved at Homewood: Slavery in 19th Century Maryland. 3.0 Credits.
Students consider the representation of slavery in historic house museums of the late 20th century through the present, and use the university’s Homewood Museum as a laboratory for the development, production and mounting of an exhibit about the men, women and children who labored at Homewood in the nineteenth century. Museums and Society Practicum course.
Instructor(s): A. Schreiber
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.377. Black Artists in American Art Museums: Correcting the Canon. 3.0 Credits.
Students are invited to examine critically the history of Black artists exhibiting within American museums. With the help of BMA staff, class will develop interpretation for an installation to accompany a major retrospective of artist Jack Whitten that considers the “canon” of art history as a site of ongoing negotiation between taste-makers, artists, dealers, and critics, as well as art institutions that include the market and the museum. Students will take advantage of archives at the BMA, the Library of Congress and Howard University. Students will help select the artworks and themes for the show; research individual participants in the social networks that facilitated the success of some artists over others; and research the biographies of individual artworks - some that have entered the canon and some that should. M&S Practicum. CBL Course. Cross-listed with Africana Studies.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.378. Collections Remix: Black at Hopkins. 3.0 Credits.
We turn a critical eye on our university’s material culture and memory under the guidance of local experts on collecting and interpreting materials that represent the African-American experience. Students will develop a strategic plan to guide future collecting on campus and will stage creative interventions with or around objects to reveal hidden stories and rethink existing interpretation. M&S Practicum. CBL course.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

Anthropology
http://anthropology.jhu.edu/

The Anthropology Department specializes in socio-cultural anthropology: the study of social and cultural forms of human life using ethnographic, historical, and comparative methods. Faculty in our department are engaged in research that addresses topics considered traditional such as the study of ethnicity, language, religion, family and kinship, or medical pluralism, and also new and emergent issues such as those relating to childhood, technological imaginaries, biomedicine, ecology, state, violence, and popular economies. In all cases, the acute awareness of shifting contexts in which institutions are embedded and the impact of global, regional, and national politics on social life is built into the methodology and the theory engaged by faculty and students. Faculty in our department have research expertise in the Americas, South Asia, the Middle East, and sub-Saharan Africa. Our research is oriented toward the investigation of a number of cross-cutting themes of trans-regional concern rather than a comprehensive coverage of global cultural areas.

The department’s distinctive orientation to anthropology can be characterized in terms of its orientation to non-European anthropological and philosophical traditions, alongside the dominant anthropologies which have been seen as definitive of the discipline in the past. In terms of specific topics, faculty in our department are engaged in research on violence, social suffering and theories of everyday life; the material and moral force of the state; money and value; environments; new kinship; anthropology of religion and secularism; anthropology of medicine; media and visual anthropology; health and well-being; and anthropology of language.

The department offers a B.A. program and a Ph.D. program. The B.A. prepares students either to continue to various employment opportunities or degree in anthropology (and related fields) or to develop anthropological skills and imagination as complementary to pre-
professional training, such as medicine, engineering, and international relations. Undergraduate course work offers an introduction to the basic methodologies and theories of contemporary anthropology through discussion and directed research on these and other topical issues. Student advising helps interested students to develop concentrations, through sequences of complementary courses tailored to their own interests, including electives outside the department. In addition, majors have the option to pursue an honors program.

Undergraduate majors in anthropology are required to do ten courses, four of which are required courses and an additional four must be taken at 300-level or higher, in addition to a language requirement. Students wishing to write an honors thesis are also required to do two additional courses in which they work on their dissertation topics. Minors are required to take seven courses, four of which are required courses.

The core curriculum for majors develops a step-wise sequence from the freshman seminar to the senior honors option. We offer an elective 100-level Freshman Seminar that introduces anthropological approaches to a broad range of contemporary issues. Here, we hope to develop curiosity in anthropology as a way of knowing the world, and to encourage critical reflection by students on their own life experiences. Our 100-level introductory course, Invitation to Anthropology, is geared toward freshmen and sophomores. The objective of this course is twofold: to offer anthropological knowledge and analytic skills to a broad range of students, and to prepare potential majors for further training in social theory and fieldwork methods. Following from this introductory course, our 200-level Ethnographies course furthers student understanding of essential themes through close attention to classic and contemporary ethnographic works in the discipline. The 300-level Methods course is an additional requirement for majors, deepening students’ capacity to link theory and method, preparing students to carry out field research, and guiding students in the writing up and presentation of original research. Building on these foundations, the 400-level Logic of Anthropological Inquiry course, also required of majors, is a thematic capstone course that demands an extended engagement with classic debates and encourages integrative thinking across the range of anthropology courses taken. Majors in anthropology may decide to pursue an honors thesis based on an extended research project. They should discuss their interest in writing a thesis with their faculty advisor in their sophomore year and before the summer of their junior year. Drawing from their previous course preparation and working closely with a faculty advisor, such students spend one summer conducting field research, one semester conducting secondary literature review, and the final semester writing their honors thesis.

Outside of the core curriculum, both majors and minors may take a wide variety of courses. Thematic courses are highly varied and reflect faculty interests, usually including (in any one year) courses in religion and philosophy; medical, legal, economic and linguistic anthropology; and study of diverse areas of the world. Courses on the state, law, and money offer a critical and comparative approach for students aiming toward political, economic, and legal careers. Courses in medical anthropology serve pre-med and public health students. Philosophical and theoretical courses are attractive to humanities students. We see teaching and research as integrally linked, and invite undergraduate students to envisage research as they take introductory and advanced courses in anthropology.

The training of graduate students focuses on providing students with a vocabulary and grammar to engage in anthropological reasoning in socio-cultural anthropology and with skills in research methods. The department emphasizes training in anthropological theory in relation to new developments in other disciplines within the social sciences; understanding of regions in terms of cross-cutting questions rather than geographical questions alone; and the capability to place a problem within a broad history of anthropology that is engaged through multiple national and regional traditions.

Our faculty brings into the classroom an extraordinary range of personal and professional experiences. We are proud to have one of the most diverse faculties in the discipline worldwide, both in terms of gender and ethnic or national origins. Their collective fieldwork experience spans the world, including the Americas, the Middle East, sub-Saharan Africa, and South Asia.

Facilities
In addition to the regular departmental colloquium where invited speakers from Hopkins and other campuses around the world present their ongoing research, the department holds one or two special symposia every year, including one organized by graduate students. The department also invites a distinguished scholar each year to present the Sidney W. Mintz Lecture. The purpose of the Mintz lectures is to integrate scholarly and social concerns, focusing on questions of political and economic inequality, racism, gender, and ethnic differences from an interdisciplinary perspective. Previous lectures have subsequently been published in Current Anthropology.

The Baltimore-Washington area is unusually rich in library, archival, and museum resources relating to anthropology. In addition to the excellent collection in the Milton S. Eisenhower Library, the William H. Welch Medical Library, and other libraries at Johns Hopkins, major anthropological holdings are available at the Smithsonian Institution, the Library of Congress, and the other specialized libraries and museums in nearby Washington, D.C. Students can use the Smithsonian Institution’s ethnological and library collection through a cooperative arrangement.

Financial Aid
Undergraduate majors and non-majors are eligible to apply for a Provost’s Undergraduate Research Award to support special research and write-up projects in their senior year.

Graduate fellowships and teaching assistantships are available, and most students admitted receive support. Stipends are currently offered at $29,000 per year plus fellowships that cover tuition and health insurance. Some additional funds are usually available on a competitive basis for summer field research (including travel grants from the Institute for Global Studies, the Program for the Study of Women, Gender, and Sexuality, and the Program for Latin American Studies), and for special language-learning needs. Write-up students may apply for a Dean’s Teaching Fellowship.

Undergraduate Programs
Courses in the department are open to all students in the university, regardless of their majors. Although there are no formal prerequisites, students with no previous courses in Anthropology are encouraged to consider courses at the 100- or 200-level. Freshman seminars are designed to introduce students to different perspectives within anthropology through close examination of a contemporary issue.

Requirements for the B.A. Degree
(Also see Requirements for a Bachelor’s Degree (p. 7))

To fulfill B.A. degree requirements with an anthropology major, students must complete a total of 30 credits (10 courses) in Anthropology and foreign language through the intermediate level. Only with permission of
the director of undergraduate studies may students use one class taken at another institution towards the major. Students must take completed course materials to the director of undergraduate studies to discuss this exception. Majors must receive a grade of C or better in all major requirements and no major requirements may be taken satisfactory/unsatisfactory. Complete major requirements are:

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AS.070.132</td>
<td>Invitation to Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>AS.070.273</td>
<td>Ethnographies</td>
<td>3</td>
</tr>
<tr>
<td>AS.070.317</td>
<td>Methods</td>
<td>3</td>
</tr>
<tr>
<td>AS.070.419</td>
<td>Logic of Anthropological Inquiry</td>
<td>3</td>
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Anthropology Electives *

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Two 100-400 level courses in the Anthropology Department</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Four 300- or 400-level courses in the Anthropology Department **</td>
<td>12</td>
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Foreign Language

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>Foreign language through the second semester of the intermediate level</td>
<td>7</td>
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</table>

* One cross-listed course taught outside the Anthropology Department may apply towards the major. With permission, one independent study may apply towards the major.

** Students pursuing honors in the major may apply the senior essay courses towards their required electives.

Honors Thesis in Anthropology

Students with at least a 3.5 GPA (major GPA) by their junior year are encouraged to write a senior thesis by registering for the two-semester Senior Essay (AS.070.561 Senior Essay-Fall and AS.070.562 Senior Essay - Spring) under the guidance of a faculty advisor.

Sample Program of Study

Freshman

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</tr>
<tr>
<td>AS.070.419</td>
<td>Logic of Anthropological Inquiry</td>
<td>3</td>
</tr>
<tr>
<td>Foreign language</td>
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Sophomore

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<tr>
<td>Foreign language</td>
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Junior

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Senior

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</tr>
<tr>
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</tbody>
</table>

Minor in Anthropology

A minor in anthropology is available to undergraduate students in any major. One independent study may apply towards minor requirements. Minors must receive a grade of C or better in all minor requirements and all course must be taken for a letter grade (no satisfactory/unsatisfactory grading). One cross-listed course taught outside the Anthropology Department may apply towards the minor; all other courses must be taken in the department. Only with permission of the director of undergraduate studies may students use one class taken at another institution towards the minor. Students must take completed course materials to the director of undergraduate studies to discuss this exception. If one of these is accepted, the student may not take a cross-listed course.

Requirements for the minor are:

Required Courses

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Anthropology Electives *

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<tbody>
<tr>
<td>One 100-400 level course in the Anthropology Department</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Two 300- or 400-level courses in the Anthropology Department **</td>
<td>6</td>
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</table>

Graduate Program

Ph.D. in Anthropology

The graduate program in anthropology leads to the Ph.D. degree. By admitting a small cohort each year, the Department of Anthropology encourages close working relationships between students and faculty and the opportunity for students to develop their anthropological interests in ways that are uniquely suited to them to become researchers, scholars, and teachers. We also encourage and help develop students wishing to pursue non-academic research careers in keeping with the needs of the contemporary world.

Requirements for the Ph.D. Degree

Students will usually spend three years in residence, one year or more conducting field research, and a final year completing the dissertation. Requirements include:

- A total of twelve courses to be completed in the first three years. The first of these courses is Proseminar and is a requirement for incoming students.
- Students will sit a three-hour exam near the end of their first year. Incoming graduate students will be provided with a reading list at the start of the summer before the academic year to initiate their self-directed growth as anthropologists and to help them prepare for the exam.
- Students are expected to conduct exploratory fieldwork during the first summer. They are to write a proposal for this fieldwork and discuss their work upon return in a departmental methodology
workshop. This workshop accompanies the Methods course, which is a requirement for students in their second year.

• For the comprehensive exams, students are required to write two essays (one conceptual and one on their study area). These essays will ideally also help develop their dissertation research proposal. The essays should preferably be completed by the end of the second year. A course called Regions has been developed to assist students in writing the essays.

• Students are also encouraged to take the Proposal Writing course offered and to apply for fieldwork grants from external agencies.

• A student should be able to demonstrate a reading knowledge of at least one foreign language relevant to his/her field of study before completing the comprehensive exams.

• A Post-Field course will be offered to those returning from the field to help them begin writing their dissertation, along with relevant professionalization workshops as needed. Post-field students are required to give a seminar on their research in the departmental colloquia series.

For further information about graduate study in anthropology, contact the academic program administrator in the Department of Anthropology or visit the departmental website at http://anthropology.jhu.edu.

Interdisciplinary Ph.D. Degrees

Students may petition the department and the graduate board to create joint Ph.D. courses of study. Past cases have included Anthropology/Public Health and Anthropology/Intellectual History (in the Humanities Center).

For current faculty and contact information go to http://anthropology.jhu.edu/people/

Faculty

Chair

Niloofer Haeri
Professor & Chair: Islamic prayers and experiences of religiosity, gender, ritual and language, public appearance and notions of modesty among Jews, Christians and Muslims, social history of moral values in Iran since early 20th century; language ideology, vernacularization and modernity. Egypt, Iran and the Middle East

Professors

Veena Das
Krieger-Eisenhower Professor: Feminist movements, gender studies, sectarian violence, Medical Anthropology, post-Colonial and post-Structural theory; South Asia, Europe

Deborah Poole
Professor: Political, legal, environmental, and visual anthropology; anthropology of the state and expertise; visual technologies; photography and racial thought in Latin America; Mexico; Peru

Associate Professors

Clara Han
Associate Professor and Director of Graduate Studies: Anthropologies of health, well-being, and care; violence; poverty; moral community; subjectivity; law, specifically in relation to incarceration; kinship; and science and technology; Latin America, specifically Chile, and the United States

Naveeda Khan

Associate Professor: Bangladesh: riparian society, engineered landscapes and the theology of ecological consciousness and climate change; Pakistan: Islam and everyday life; urban anthropology; religion and theology; law and literature; techniques and technologies of perception; US and South Asia: temporality and emergent rationalities.

Juan Obarrio
Associate Professor and Director of Under Graduate Studies: political, law and temporality, theology in relation to state and the economy, memory and subjectivity, magic, violence, value, experimental writing. Southern Africa, Latin America.

Anand Pandian
Associate Professor: philosophical anthropology / postcolonial and posthumanist ecology / sensory ethnography / experimental writing / anthropological methods / Baltimore / India / Earth

Assistant Professors

Alessandro Angelini
Assistant Professor: Politics and aesthetics of urban maps, models, and simulations. He uses ethnographic and historical data to show that different representations of the city inflect debates over how we imagine and manage it. South America, specifically Brazil, Rio de Janeiro.

Michael Degani
Assistant Professor: Africa, Economic Anthropology, Energy, Infrastructure, Urbanism

Tom Özden-Schilling
Assistant Professor: First Nations, political ecology, cartography, science and technology studies, expertise, forestry, climate change, media. Canada, specifically, British Columbia.

Professors Emeriti

Jane I. Guyer
Social and economic anthropology, money and culture, household and gender, West Africa

Pamela Reynolds
Ethnography of children and youth—labor, healing, ethics; state violence; the political actions of the young and their involvement in armed conflict; ending war—truth, justice, and the archive; philosophers on the young; Southern Africa

Joint Appointments

Jeremy Greene
Professor and Chair of History of Science: Twentieth century clinical medicine; pharmaceuticals; medical technology; medical anthropology; global health; history of disease.

Paola Marrati
Professor of Humanities, joint appointment in Dept. of Philosophy, Director of the Program for the Study of Women, Gender, and Sexuality

Erica Schoenberger
Professor (Environmental Health and Engineering): Economic Geography, Regional Development

Todd Shepard
Associate Professor, History, Co-Director, Program in the Study of Women, Gender, and Sexuality

Dimitrios Yatromanolakis
Associate Professor (Department of Classics): research centers upon both technical and more cross-disciplinary fields: archaic and classical
Greek literature and performance cultures, sociocultural history, vase-painting and vase-inscriptions; Greek papyrology and epigraphy; and historical and comparative anthropology.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.070.104. Special Opportunities in Undergraduate Learning: Anthropology of Sound. 1.0 Credit.
This course explores recent discussions on the possibilities of sound to challenge and expand conventional methods used in the humanities, contemporary social research, and the natural sciences. Drawing from a range of philosophical, historical, psychoanalytic, linguistic, anthropological, artistic, and scientific sources; students will discuss the ways sound has been historically experienced, represented, produced, classified, cancelled, and circulated in different parts of the world. These topics will be examined through reading assignments, listening sessions, and weekly sound recording assignments.
Instructor(s): T. Ozden-schilling
Area: Humanities, Social and Behavioral Sciences.

AS.070.109. Introduction to Environmental Anthropology. 3.0 Credits.
What is an “environment,” socially speaking? How have pipelines, animals, conservation, and capitalism shaped the way we talk about “nature” and “society” in the present day? This course examines the mutual transformation of humans and their environments through ethnography, environmental history, cultural and political ecology, human geography, and social theory.
Instructor(s): G. Valdivia Corrales
Area: Humanities, Social and Behavioral Sciences.

AS.070.113. Freshman Seminar:. 2.0 Credits.
Various topics.
Instructor(s): A. Angelini
Area: Humanities, Social and Behavioral Sciences.

AS.070.122. Climate Change in Everyday Life. 3.0 Credits.
Climate change is the average of weather over long periods of time. It is usually studied by means of global simulation models. More recently human activity affecting the climate has also begun to be studied and with it the effects of climate change on the human body, activity and society. In this course we will draw upon film, scientific reportage, ethnography, literature and philosophy to explore the human embodiment of climate change within everyday life.
Instructor(s): N. Khan, R. Tobias
Area: Humanities, Social and Behavioral Sciences

AS.070.126. Photography in Anthropology. 3.0 Credits.
We will examine historical uses of photographs, critiques of them and more recent creative uptakes of photography in anthropology. We will learn from the use of photographs by anthropologists in the Hopkins department. We will also undertake independent projects. Students will learn to critically engage and mobilize images through the history of its use in anthropology.
Instructor(s): D. Poole; N. Khan
Area: Humanities, Social and Behavioral Sciences.

AS.070.129. Introduction to the Anthropology of the Middle East. 3.0 Credits.
This course introduces the students to some of the main themes and debates shaping the anthropology of the Middle East. It will begin by critically analyzing the definition of the ‘Middle East’ and of the ‘Orient’ and by presenting an overview of the ‘zones of theory’ which characterized the discipline at its inception. It will then explore the contemporary re-articulations of such themes and the emergence of new themes and debates, such as the secular/religious divide, the modernity debate, the anthropology of Islam and the ethical turn, gender and feminism, neoliberalism, consumerism, cosmopolitanism, migration and mediation. The objective is to convey the main lines of anthropological inquiry within each theme, and to show their relevance to the understanding of contemporary Middle Eastern societies.
Instructor(s): P. Abenante
Area: Humanities, Social and Behavioral Sciences.

AS.070.132. Invitation to Anthropology. 3.0 Credits.
Click. The screen that brings you last night’s Instagrams and celebrity gossip also flashes glimpses of melting icecaps and burning rubble. These are complex times for human beings, both exciting and unsettling. This course introduces anthropology as a way of reflecting on the challenges of contemporary life around the globe, focusing on themes such as migration, warfare, ecology, inequality, and addiction.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences

AS.070.133. Studying the HIV/AIDS Epidemic. 3.0 Credits.
This course will introduce students to the study of the HIV/AIDS epidemic as scholars in the social science and humanities have undertaken it. The readings will include ethnographies of the disease in the non-west and short theoretical readings to complicate notions of health, pleasure, healing and cure. Furthermore, by focusing on the various regions of Africa, the course hopes to demonstrate the manner in which the social and cultural landscape change the experience of the epidemic.
Instructor(s): V. Saria
Area: Humanities, Social and Behavioral Sciences.

AS.070.134. Chemical Pollution and Social Life. 3.0 Credits.
The present is marked by a ubiquitous exposure to different sorts of toxic chemicals: from disasters that affect entire communities to the built environments in which we live and work, from the traces of pesticides in our food to the worldwide disrupting effects of oil production. Drawing from social theory, ethnography, environmental history, policy documents, newspaper articles, commercial ads, and documentaries, this course will introduce anthropology as a way of thinking through the interactions between processes of chemical pollution and social worlds.
Instructor(s): J. Moreno Garcia
Area: Humanities, Social and Behavioral Sciences.

AS.070.138. Thinking Through Pain. 3.0 Credits.
Despite being a common experience, pain remains a mystery for both medicine and the humanities. Can it be described? Measured? Eliminated? Is it the same for everyone? This course explores some of the ways in which pain is represented, interpreted and addressed in contemporary clinical and social settings, combining ethnographic and testimonial literature with fiction and film to illuminate key ethical and political issues at stake in defining and treating pain.
Instructor(s): P. Madariaga Villegas
Area: Humanities, Social and Behavioral Sciences.
AS.070.139. Markets and Morals. 3.0 Credits.
This course studies forms of exchange as they are imagined and experienced across diverse political and religious settings. The aim is to understand the cultural rationalities and moral dimensions of economic ideas and activities, such as gifts, commodities, sacrifice, investment, credit, debt and value.
Instructor(s): A. Saraf
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.143. Anthropology of Markets and Capitalism. 3.0 Credits.
Capitalism is built on social and cultural processes. In this course, we explore the culture of capitalism across diverse settings — a fish market in Tokyo, an investment bank in Wall Street, and the organ donation economy in China, among many others. We ask what motivates the makers of markets today, as well as their critics.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences

AS.070.144. Anthropology and Visual Media. 3.0 Credits.
This course examines the production of visual media within anthropology. We look at the particular ways in which visual media such as film, television, and photography shape anthropological practice.
Instructor(s): C. Venkataramani
Area: Humanities, Social and Behavioral Sciences

AS.070.154. Maps and Mapping. 3.0 Credits.
This course explores maps as cultural documents and ethnographic sites. Students will learn how cultural understandings of space, time, and the visible world shape cartographic conventions. Through mapping exercises we will explore how ethnographer can use maps to theorize the nature of political, cultural, and economic life.
Instructor(s): D. Poole; V. Procupez
Area: Humanities, Social and Behavioral Sciences

AS.070.189. Islamic Critique: Ethical and Political Reasoning. 3.0 Credits.
This course investigates the concepts and practices of critique available in contemporary Muslim societies. Focusing on moral and political dimensions of critique, we examine genealogies and exchanges among Islamic traditions and those of the European Enlightenment. Dean's Prize Freshman Seminar.
Instructor(s): J. Guyer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.202. Economic Anthropology. 3.0 Credits.
How do the abstract principles of economics play out in a diversity of times and places? This course surveys anthropological research on the social organization of labor, the political institutions that underlie wealth and property, and the cultural meanings of money and commodities. Through these topics, we will look at enduring debates about the rationality of markets and the nature of capitalism.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.203. Healing: Politics and Poetics. 3.0 Credits.
Metaphors of health and illness; individual and social. The body in pain and the body politic. Ethnographies of historical memory vis-à-vis medicine, epidemics, sacredness, shamanism, terror, humanitarianism, truth and reconciliation.
Instructor(s): J. Obario
Area: Humanities, Social and Behavioral Sciences

AS.070.204. An introduction to Islamic Intellectual History. 3.0 Credits.
This course will study the vibrant world of the Seljuks, an Islamic empire that flourished between 1037 and 1157 AD, from Khorasan across Baghdad to Hijaz and Anatolia. As an exploration in intellectual history, we will attempt to understand the social world of the Seljuk Turks through political, religious, and literary texts. We will first read a political treatise, Siyasatnama (The Book of Government), written by Nizam al-Mulk (1018-1092), the formidable minister of the Seljuk Empire, who oversaw the reign of three successive sultans during the second half of the eleventh century and created a strong bureaucratic state for the Seljuks. During his administration, he commissioned the development of madrasas, colleges dedicated to the teaching of Islamic law, theology, literature, and history. The most famous of these madrasas was the Baghdad Nizamiyya where Al-Ghazali (1058-1111) taught from 1190 and 1194. We will read Al-Ghazali’s Deliverance from Error in order to explore the state of religious learning at the peak of the Islamic Golden Age. Having discussed the political and religious foundations of Islamic orthodoxy in the eleventh century, next we turn to the rise of heterodox movements that challenged the authority of the Seljuk state. We will briefly examine the history of the Isma’ili branch of Shia Islam, focusing on the politico-religious ideas of its most potent representative, Hassan-i Sabbah (1050s-1124). Finally, we will end our class with the Rubaiyat of Omar Khayyam (1048-1131), the prominent poet and polymath of the eleventh century.
Instructor(s): B. Polat
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.205. Post-Soviet Russia: An Anthropological Perspective. 3.0 Credits.
This course is designed to introduce students to anthropology’s contribution to ongoing conversations about Russia’s political and economic system, social life, as well as Russia’s place in the world since the fall of the Soviet Union. Students will be encouraged to think beyond easy distinctions between socialism and post-socialism, Putin’s Russia and the West, often starkly and unreflexively established by commentators and in the media. Topics will include post-socialist transition, memory, violence and war, gender and sexuality.
Instructor(s): G. Hervouet-Zeiber
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.211. The Production of European Culture. 3.0 Credits.
This course is an introduction to the anthropological study of “cultural production” in Europe, from literature and performance to museums and public art.
Instructor(s): A. Brandel
Area: Humanities, Social and Behavioral Sciences.

AS.070.222. Africa in the 21st Century. 3.0 Credits.
Rapid urbanization has created new needs, occupations, entertainments, etc., outside the “formal sector”. We use anthropological studies, African literature, film and the press on-line to understand making a living.
Instructor(s): J. Guyer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.070.224. Plastic. 3.0 Credits.
Plastic is a ubiquitous substance in the contemporary world. Ideas about the plasticity or malleability of human nature are also pervasive. Drawing on anthropology, history of science, environmental studies, art, design, films and other media, this course will examine the plastic dreams and nightmares that haunt our lives today.  
Instructor(s): A. Pandian  
Area: Humanities, Social and Behavioral Sciences  
Writing Intensive.

AS.070.226. Chemical Pollution and Social Life. 3.0 Credits.  
The present is marked by a ubiquitous exposure to different sorts of toxic chemicals: from disasters that affect entire communities to the built environments in which we live and work, from the traces of pesticides in our food to the worldwide disrupting effects of oil production. Drawing from social theory, ethnography, environmental history, policy documents, newspaper articles, commercial ads, and documentaries, this course will introduce anthropology as a way of thinking through the interactions between processes of chemical pollution and social worlds.  
Instructor(s): J. Moreno Garcia  
Area: Humanities, Social and Behavioral Sciences.

AS.070.228. Photography and Writing: Crafting an Anthropological Text. 3.0 Credits.  
This course explores resonances between photography and anthropological writing. Students will be introduced to basic techniques in photographic composition. How do photography and anthropology share techniques of rendering people, places, and things? Other topics include the role of sensation, reflection, and creativity in depicting a scene, as well as care and ethics. Students will develop an individual project that folds photographic sensibilities into the writing process.  
Instructor(s): M. Sehdev  
Area: Humanities, Social and Behavioral Sciences  
Writing Intensive.

AS.070.230. From Jihad to Revolution: The Political Struggles of Women in the Middle East. 3.0 Credits.  
The course explores the role of women as political prisoners, combatants and activists in the modern history of the Middle East using a multidisciplinary approach. It explores the history of women’s engagement in political struggles in the Middle East over the long durée starting with anti-colonial movements in the 20th century up until the recent uprisings known as the “Arab Spring”. The course is geared towards the examination of the ways in which politics, in a broad sense, is gendered in the Middle East by examining how the social and political construction of women as political subjects influence the nature and practice of political life, as well as the ways in which sexual difference has served as a basis for social and political organization.  
Instructor(s): F. Halbouni  
Area: Humanities, Social and Behavioral Sciences.

AS.070.231. Housing Matters. 3.0 Credits.  
This course will collectively craft an anthropological critique of housing, both as a social concern and as an object of public policy and urban planning. As a key component of the structure and functioning of cities, housing is instrumental to urban governmentality, segregation, and citizenship, as well as to cultures of consumption and class formation, identities, solidarities and the imagination of alternative social orders. We will examine how the material and social effects of housing shape the politics of difference, rights, markets and property relations, consumption and activism in the US urban context, as well as social experiences in other regions of the world.  
Instructor(s): V. Procupez  
Area: Humanities, Social and Behavioral Sciences  
Writing Intensive.

AS.070.233. Africa as Laboratory. 3.0 Credits.  
Africa, as anthropologists have noted, has long been a “laboratory of the future.” By tracing the intersections of technology and politics, this class considers the various experiments in oppression and liberation that have unfolded within it. Following a broad historical arc, we begin with colonial medicine, racial science, and urban planning; move to national infrastructures and postcolonial resource extractions; and finally consider contemporary African engagements with consumer technology.  
Instructor(s): M. Degani  
Area: Humanities, Social and Behavioral Sciences  
Writing Intensive.

AS.070.235. Anthropology of Christianity. 3.0 Credits.  
This course introduces students to the study of Christianity from the Anthropological perspective. Among the themes discussed are: Christian conversion, theology, practice, and knowledge in a range of national contexts. The course considers broad trends in global Christianity, including the retreat of traditional Catholicism and the surge of charismatic forms of Christianity, such as Pentecostalism and Charismatic Catholicism.  
Instructor(s): J. Richlin  
Area: Humanities, Social and Behavioral Sciences  
Writing Intensive.

AS.070.237. Conflict and Environment. 3.0 Credits.  
How do conflicts in and over environments shape our understandings of identity and belonging? Violence, resource loss, and resettlement may shape landscapes through physical infrastructures or sites of extraction, but they also live on in memory, art, and other social practices. From the fencing of the American west to attempts to save Andean glaciers through the legal recognition of “earth beings,” this course examines the many ways environments and conflict co-shape one another.  
Instructor(s): T. Ozden-schilling  
Area: Humanities, Social and Behavioral Sciences.

AS.070.241. African Cities. 3.0 Credits.  
Over the past two decades, African cities have absorbed rapid population increase without accompanying economic growth. Students will review the major challenges of this mode of urbanization and explore the vibrant ways residents have sought to meet them. Following anthropology’s commitment to lived experience, we will track these issues through the twists and turns of everyday life, and consider what they may say about urbanity more broadly in the 21st century. Topics include livelihood, the built environment, conflict and membership, and popular culture.  
Instructor(s): M. Degani  
Area: Humanities, Social and Behavioral Sciences  
Writing Intensive.
AS.070.249. Latin American Cities: Public Spaces and Private Lives. 3.0 Credits.
This course will explore the relationship between public space and forms of political expression as well as the cultural implications of various senses of privacy and domesticity in contemporary Latin American cities. Drawing on recent anthropological and historical texts, we will study the formation of urban public space in the region, as well as its use and representation by different social, political and ethnic groups.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.251. Aliens, iPads, and Neurotribes: An Introduction to the Anthropology of Autism. 3.0 Credits.
This course is an overview of the emerging anthropology of autism. It surveys the history of the autism diagnosis – from its original formulation at Johns Hopkins in 1943 to its rapid expansion into a "spectrum" condition in the late 1990s – and the ways in which social scientists of different disciplines have tried to analyze the role of social and cultural factors in its evolution. The course also looks at a range of ethnographic studies that have asked what it means to be autistic in today's world.
Instructor(s): D. Platzer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.253. Introduction to Medical Anthropology. 3.0 Credits.
Is illness bound within an individual body, or is it entangled with our relations? What are the ethics and politics of the doctor/patient relation? How are medical technologies changing the way we experience illness and healing? How have global institutions responded to the problems posed by disease and development? Drawing on ethnography, film, and literature, this course introduces students to how anthropologists have explored and researched problems related to health and illness.
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.254. Anthropology of Autism. 3.0 Credits.
This course examines autism in relation to new understandings of neurodiversity and neurodivergence. It explores the role of autism in the construction of social norms and the medicalization of difference. The course will examine the ways in which autism is represented in popular media and the impact of new neuroscientific research on our understanding of autism.
Instructor(s): B. Polat
Area: Humanities, Natural Sciences.

AS.070.256. Police in Ethnographic Perspective. 3.0 Credits.
This course examines policing throughout history and across the world. Course readings will provide an empirical account of the many diverse forms of police and the issues associated with them.
Instructor(s): V. Kumar
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.257. Reproduction, Kinship, and the State. 3.0 Credits.
This course takes reproduction as site to examine the interplay of kinship relationships and the state. We will take topics including adoption, gay parenting, the medical and social aspects of childbirth, and reproductive technologies to explore how reproductive futures are unevenly distributed, endured, aspired to, and re-made.
Instructor(s): C. Han; C. Sufrin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.259. Gift and Sacrifice. 3.0 Credits.
How do gifts become the foundation of society? How does the fetish take control over a person? What is the meaning of the ritual sacrifice of living beings and things? The course will explore the craft of ethnography and its relationship to anthropological knowledge. Reading a series of classic and contemporary works, and engaging in our own writing experiments, we attend to the knotty problem of rendering lived experience, attending to narrative, voice, structure, and the relationship between description and analysis.
Instructor(s): T. Ozden-schilling
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.260. Culture, Religion and Politics in Iran. 3.0 Credits.
This is an introductory course for those interested in gaining basic knowledge about contemporary Iran. The focus will be on culture and religion and the ways in which they become interwoven into different kinds of political stakes.
Instructor(s): N. Haeri
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.262. Cuban Intellectuals, Cinema, and the State. 3.0 Credits.
This course examines the relationship between intellectuals and the Cuban state, focusing on how cinema and other arts have been mobilized both as propaganda and as sites for social criticism. Screenings are required for this course and will take place on Tuesdays from 7 pm to 9:30 pm. Cross-list: Film and Media Studies, PLAS, Romance Languages.
Instructor(s): L. Humphreys
Area: Humanities, Social and Behavioral Sciences.

AS.070.264. What is Scientific Experimentation?. 2.0 Credits.
How do scientists design and conduct experiments? What experimental results advance our understanding of scientific theories? In this introductory course, we will discuss how experimentation contributes to scientific knowledge making. Reading a number of key articles, we will explore the ways in which an experimental model is developed in behavioral neuroscience. We will discuss how neurobiologists interpret psychological concepts and theories by drawing on animal experimentation.
Instructor(s): B. Polat
Area: Humanities, Natural Sciences.

AS.070.267. Latin American Cities: Public Spaces and Private Lives. 3.0 Credits.
This course will explore the relationship between public space and forms of political expression as well as the cultural implications of various senses of privacy and domesticity in contemporary Latin American cities. Drawing on recent anthropological and historical texts, we will study the formation of urban public space in the region, as well as its use and representation by different social, political and ethnic groups.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.268. Police in Ethnographic Perspective. 3.0 Credits.
This course examines policing throughout history and across the world. Course readings will provide an empirical account of the many diverse forms of police and the issues associated with them.
Instructor(s): V. Kumar
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.273. Taxonomy: An Introduction to the History of Classification. 3.0 Credits.
This course will explore the relationship between public space and forms of political expression as well as the cultural implications of various senses of privacy and domesticity in contemporary Latin American cities. Drawing on recent anthropological and historical texts, we will study the formation of urban public space in the region, as well as its use and representation by different social, political and ethnic groups.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.275. Reproduction, Kinship, and the State. 3.0 Credits.
This course examines the relationship between intellectuals and the Cuban state, focusing on how cinema and other arts have been mobilized both as propaganda and as sites for social criticism. Screenings are required for this course and will take place on Tuesdays from 7 pm to 9:30 pm. Cross-list: Film and Media Studies, PLAS, Romance Languages.
Instructor(s): L. Humphreys
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.277. Contested Indigeneity. 3.0 Credits.
This course will explore the relationship between public space and forms of political expression as well as the cultural implications of various senses of privacy and domesticity in contemporary Latin American cities. Drawing on recent anthropological and historical texts, we will study the formation of urban public space in the region, as well as its use and representation by different social, political and ethnic groups.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
**AS.070.278. “Cutting (out) the Middleman”?. 3.0 Credits.**

Middleman are popularly conceived as a person who acts as an interface between two parties, usually for a fee. The figure of the middleman, however is seen in a negative light as an exploitative element. Rather than assume the middleman to be a given entity, this course takes a detour into ethnography, fiction and film to rethink how specific social milieus shape practices, politics and networks of mediation that exceed the physical figure itself. This course will thus, cut the middleman “out” of everyday life and draw mediation into our field of vision.

Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences

**AS.070.279. Ecological Anthropology. 3.0 Credits.**

This course explores questions of nature, ecology, and environment from an anthropological perspective, drawing on case studies from around the globe. Topics will include human and animal relations, forest and marine livelihoods, industrial development and activist politics, as well as the urban ecology of Baltimore.

Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences

**AS.070.281. Home and Belonging. 3.0 Credits.**

In this course we will examine different conceptions and experiences of "home" through studies of domesticity, kinship and household in diverse cultural settings. Reading anthropological analysis of urban built environment and locality, we will explore the notions of home and homeland, as realms of care, intimacy and belonging yet also as sites of subjection, discrimination and gender/racial inequality.

Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences

**AS.070.285. Understanding Aid: Anthropological Perspectives for Technology-Based Interventions. 3.0 Credits.**

This course combines anthropological perspectives with the discussion and examination of technology-based interventions in the field of development and aid policies, with particular focus on activities related to water resources, sanitation, and hygiene. Readings and discussions analyze some of the theoretical, historically rooted, and practical issues that challenge those who hope to provide effective aid. A key aim of this course is to provide students with better understanding of cultural, social, environmental and economic issues relevant to technical intervention in developing countries.

Instructor(s): E. Cervone; W. Ball
Area: Humanities, Social and Behavioral Sciences

**AS.070.290. Modern South Asia: Bangladesh/Pakistan. 3.0 Credits.**

Bangladesh and Pakistan, two major regional players in South Asia, originate in the 1947 Partition of India and shared nationhood between 1947 and 1971, ending with the War of Independence in 1971 in which Bangladesh separated from Pakistan. Since that time the two nation-states have been on different paths that have sometimes mirrored each other. This course brings together contemporary works of national histories, social movements and cultural production to consider the politics of self-differentiation and the points of convergences.

Instructor(s): N. Khan
Area: Humanities, Social and Behavioral Sciences

**AS.070.292. Landscape and Power. 3.0 Credits.**

How does the production and public interpretation of maps, photographs, and other visual media shape struggles over resources, political power, and public health? Surveying approaches from political ecology and environmental history, this course will expose students to a range of ethnographic strategies for analyzing media amidst environmental conflicts.

Instructor(s): T. Ozden-schilling
Area: Humanities, Social and Behavioral Sciences

**AS.070.293. Anthropology of Material Worlds. 3.0 Credits.**

This course explores how anthropologists study material forms and objects in relationship to social, political and cultural life. Topics to be considered include, totemism, art, engineering, garbage, display, collection, and the fetish.

Instructor(s): D. Poole
Area: Humanities, Social and Behavioral Sciences

**AS.070.294. Political Anthropology of Africa. 3.0 Credits.**

The course will explore classical and contemporary ethnographies of the political in Africa, examining how their authors address issues of power, hierarchy and symbol. We will study various articulations of state, ethnicity and community that are analyzed by observing relations between power and resistance or between law, economy and violence through war, custom and ritual. The seminar will also address the way in which Africa has been constituted as a key source of the sub-field of political anthropology through colonial trajectories, postcolonial detours and the political imagination of the past and the future.

Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences

**AS.070.295. Conflict and Security in a Global World. 3.0 Credits.**

Students will be introduced to problems of global governance in the context of transnational conflicts, changing nature of war, new epidemics and pandemics, and the threats of planetary extinction. What are the ways security is imagined and what kinds of political passions are mobilized for security of people versus security of states.

Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences

**AS.070.296. Introduction to Migration Studies. 3.0 Credits.**

How can we understand the city from positions of marginality and risk? What challenges does urban living pose to its most vulnerable residents? We will examine these questions, and methodological and conceptual issues they raise, with anthropological research from five cities: Johannesburg, São Paulo, Ibadan, New York, Kuala Lumpur. We will explore each city from the perspective of particular residents and the specific struggles they face, including crime and security, economic uncertainty, and sexual discrimination.

Instructor(s): J. Richlin
Area: Humanities, Social and Behavioral Sciences
AS.070.297. Discover Hopkins: Medicine, Sports, and Culture. 1.0 Credit.
This course examines how medicine is practiced in different cultures around the world. In particular, we draw on theories and concepts from medical anthropology to study how these differences reveal alternative perspectives on the body, its health and its capabilities. To sharpen our inquiries into cultural differences surrounding bodily health, we look comparatively at the anthropology of sports and bodily performance. In looking at how concepts including illness, wellness, and injury differ across cultures, we consider, for example, how the bodily experience of pain not only varies according to societal beliefs and behaviors, but also changes as one pursues the limits of athletic performance. In addition to introducing how cultural anthropology engages with medicine and sports performance, this course enriches scientific interest in medicine by teaching students techniques of critical reasoning that powerfully investigate both how medicine is practiced and the cultural phenomenon of bodily health. Prior study in anthropology is not required. We anticipate talks from two current medical residents who were undergraduate majors in anthropology, a high-level athlete, and a field trip to speak with physicians at the Maryland Medical Center.
Instructor(s): T. Thornton
Area: Social and Behavioral Sciences.

AS.070.298. The Family at War: Crisis & Ambivalence in the Study of Kinship. 3.0 Credits.
This course will introduce students to one of the foundational concerns of anthropology and bring to the fore critiques that bear upon what it means to relate to one another. Students will be introduced to theories of kinship and the myriad challenges to fixed notions of the family. Specifically, course readings will consider interventions in anthropological studies of kinship, such as in studies of new reproductive technologies and queer kinship. In addition, course readings will consider the notion of the family in colonial and *post*-colonial contexts, as well as in *post*-conflict societies. A primary concern of the course will also be to encourage students to think critically about the ways in which knowledge is produced, institutionalized, and disseminated.
Instructor(s): M. Banahi
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.300. The Global Artwork. 3.0 Credits.
This course is about art practice in a postcolonial context, where the techniques and pictorial concepts formed by a European history of art are confronted by other traditions of representation, beset by different kinds of political struggles, and poised against the background of religious traditions other than that of Christianity. What problems of history, difference and the self arise in this context, and what forms of art practice emerge to address these problems? In what ways do these forms of art practice draw upon religious traditions, and how do we think about the displacement of religious traditions in modern art? In this course, we will explore these questions by examining the modern art of the Middle East, South Asia, and China, in conjunction with readings from anthropology, art history, comparative literature, philosophy and religious studies.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.302. Crisis and Futurity: New Ethnographies of Africa. 3.0 Credits.
"Africa Rising" or "The Hopeless Continent?" Within the span of a decade, The Economist magazine famously declared each to be true. In this class we turn to the genre of ethnography, with its focus on lived experience and critical nuance, to make sense of this seeming contradiction. We explore the themes of crisis and futurity through new works by Mbembe, De Boeck, Obarrio, and others.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.303. The Romantic Legacy of Anthropology. 3.0 Credits.
The word "romantic" has long carried negative connotations within anthropology meaning the tendency to idealize, exoticize, or seek out the irrational. Instead, through a focus on the themes of science, nature, art, intuition, systematicity and creativity, we suggest that romantic philosophy has offered and continues to offer much of interest for contemporary anthropology. Drawing on readings in philosophy, anthropology, science and literature, we explore the long suppressed romantic legacy of anthropology.
Instructor(s): A. Brandef, N. Khan
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.307. Markets and Morals. 3.0 Credits.
This course studies markets across diverse religious and political settings to explore the cultural rationalities and moral dimensions of economic activities such as exchange, circulation, investment, credit, debt and value.
Instructor(s): A. Saraf
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.308. Norms and Emotions: Anthropology of Psychiatric Knowledge. 3.0 Credits.
This course will introduce students to methodological understandings of therapeutic and scientific practices in contemporary psychiatry. Through a selection of seminal readings in anthropology and history, we will explore the social and economic contexts. The course material will expose students to diverse approaches in the scholarship, which explore the role that psychiatric knowledge plays in the administration of social life and in shaping present cultural understandings of self and interpersonal relationships.
Instructor(s): B. Polat
Area: Humanities, Social and Behavioral Sciences.

AS.070.313. The Anthropology of Belief: Religious Experience, Publics, and Personhood. 3.0 Credits.
The aim of this course is to enable you to ask intelligent questions about the ways individuals are called upon as "religious", and more specifically, to allow you to engage in a reflection on the publics of which they are a part, and the means by which they come to cultivate a sense of personhood. Closely reading theory, ethnography, and literature in relation to each other, we will try to develop a nuanced understanding of the many ways in which human beings have imagined and conducted themselves as religious persons. How do ideas of imagination, habit, desire, and the senses play into our understanding of cultures of faith?
Instructor(s): M. Wilson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.070.314. Activism and Assembly, Local and Global Connections. 3.0 Credits.
This course offers an anthropological perspective on political mobilization and struggles for social change and citizenship rights in several regions of the world. It charts collective action among the urban poor, indigenous peoples, queer rights activists, feminists, environmentalists and grassroots groups in various cultural and political contexts, to examine methodologies, representations, and local and global networks.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences

AS.070.317. Methods. 3.0 Credits.
This course aims to teach basic fieldwork skills: Choosing and entering a community; establishing contacts; learning to listen and to ask questions and locating archival material that might be relevant. It is a hands-on course that increases student familiarity with various neighborhoods such as the Arts District in Baltimore. Recommended Course Background: two or more prior courses in anthropology (not cross-listed courses).
Course is a requirement for anthropology major.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.318. The Atlantic World. 3.0 Credits.
This seminar explores the formation of the South Atlantic through a reading of historical and ethnographic texts. We examine the making of history and culture as contentious fields of struggle.
Instructor(s): A. Angelini
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.320. Anthropology of Time. 3.0 Credits.
The course is a cross-cultural exploration of ideas of time and temporality found in ethnographic, philosophical and literary sources: Anthropological perspectives on relations among past, present and future; Ritual, imagination and social practice in the contexts of religion, development, finance, catastrophe, crisis, democracy, revolution; Analysis of representations of time and the Other in anthropological works and media reports; the contemporary and the untimely.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences

AS.070.327. Poverty's Life: Anthropology of Health & Economy. 3.0 Credits.
Medicine, economics, and ethics have profoundly shaped debates on poverty. This course analyzes these debates and tracks the relationships between body, economy, and the everyday. How can anthropological reasoning and methods inform approaches to health and economic scarcity and insecurity?
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.331. Anthropology of Poetry and Prayer. 3.0 Credits.
What kind of activity is prayer? Are we talking to God(s), to our ancestors, to ourselves? What do poetry and prayer share? The course will explore these and similar questions with particular attention to questions of repetition, memory, meaning and presence.
Instructor(s): N. Haeri
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.333. Theologies of Political Life. 3.0 Credits.
This course explores the relationship between modern political forms and theological traditions. Looking at developments both in the West and the postcolonial world, we will examine the multiple ways in which theological traditions have continued to inform how political life is conceived and pursued. In particular, we will focus on the relation between liberalism and the Christian tradition; the turn to messianism in critical theory; the transformation of the shari'a into a legal form; and its imbrication in anti-colonial politics.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.335. Anthropology of Science and Medicine. 3.0 Credits.
This course will introduce students to a number of key concepts and methods in anthropology of science and medicine. Providing a general introduction and a systematic survey of the scholarship, the course seeks to shed light on the medico-scientific problems of modern life from the viewpoint of social-scientific inquiry. Through seminal publications within the field, we will explore the effects of scientific research and science-based medicine on human life, social relations, and cultural understandings of self. We will also discuss the ways in which cultural norms and values inform and shape the recent developments in science and medicine.
Instructor(s): B. Polat
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.337. Digital Media, Democracy, and Control. 3.0 Credits.
This course examines how digital technologies enable new publics that circumvent state and social controls as well as how they are mobilized to confirm existing racial, gendered, and political hierarchies.
Instructor(s): L. Humphreys
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.340. The Elementary Forms of American Religious Life. 3.0 Credits.
In the United States, the nation that in its infancy so famously erected a “wall between Church and State,” religion remains a persistent, and insistently public concern today, occupying our literary imagination, filling dockets and riding the national airwaves. Far from dropping out of a rapidly secularizing public sphere, specific forms of religious life have become deeply embedded in America, while the nation has also impressed its own particular institutional character upon religious expression. This course takes an anthropological lens to the particularity of American forms of religious life, asking what claims they make on the liberal subject, and through what enduring institutional forms and channels.
Instructor(s): C. Block
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.070.343. On Seeing: Between Religion and Art. 3.0 Credits.
This course reflects on what it is to see, by examining how different religious traditions have conceived of seeing, and then considering how seeing is organized by modern forms of art practice. Our inquiry will range across a variety of cases—from devotional practices in Christianity and Hinduism; to concepts of vision in the Islamic tradition; to the critique of images during the Protestant Reformation and the legacy of that critique in modernism; and to the development of new technologies like photography and film—and it will draw on readings from anthropology, art history, critical theory and religious studies.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences.

AS.070.346. Cinema and Ethnography. 3.0 Credits.
Films, like ethnographies, stage encounters with foreign worlds. We will investigate this parallel by examining, side-by-side, cinematic and anthropological representations of subjects like environmental conflict, urban poverty, religious pilgrimage and media culture.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences.

AS.070.347. Anthropology and Public Action. 3.0 Credits.
Anthropologists have used their expertise in public debates, legal cases, advisory roles and so on, and have studied the "public sphere". General and case studies, following of our professional association, shows how anthropological knowledge has been mobilized.
Instructor(s): J. Guyer
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.070.348. Anthropology of Mental Illness. 3.0 Credits.
This course explores how the institutions of the family, state, and neighborhood respond to and shape mental illness; how the normal, abnormal, and pathology are experienced and defined; and how disease categories circulate in social worlds.
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences.

AS.070.352. Evolution, Ecology, Becoming. 3.0 Credits.
The concept of evolution is central to social theory. Originating in the question of the species, it has moved into questions of human ecology, cultural forms and modes of thought. While it remains a deeply contested, often criticized concept, particularly in its neo-Darwinian manifestation, it orients anthropological thinking in ways that are as yet to be examined. Reaching into the archives of anthropology and other cognate disciplines, this course will examine the writings of Lyell, Darwin, Marx, Morgan, Boas, Steward, Bateson, Ingold among others. Co-listed with AS.070.610
Instructor(s): A. Goodfellow; N. Khan
Area: Humanities, Social and Behavioral Sciences.

AS.070.357. An Anthropology of the City. 3.0 Credits.
Strangers, neighbors, proximities, contagion, segregation. How do these notions track with notions of the city? In this course, we will explore the city through both anthropological literature and primary materials across different world regions. We will focus specifically on themes of dying and death, proximity, and stranger sociability. Particular attention will be paid to studies of poverty.
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.070.359. Korean War. 3.0 Credits.
This course takes the Korean War as a site to both explore: 1) contemporary historical and political transformations in East Asia and globally and 2) the ways in which violence, catastrophic loss, and separation are woven into everyday life. It will explore the Korean War through film, fiction, historiography, and draw on comparative materials in anthropology.
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences.

AS.070.366. Speculative Anthropology. 3.0 Credits.
Anthropology has always been a speculative enterprise, an attempt to think beyond some familiar idea of the human. We will explore this speculative dimension by looking at crossovers between anthropology and contemporary art, science fiction, philosophy, and environmental politics. Working with texts, films, drawings and other media, we will examine the experimental and imaginative nature of anthropology.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.070.372. Religion and Media. 3.0 Credits.
This course examines the ways in which conventional and non-conventional media recreate or transform religious experience in modern life. Increasingly, religion is experienced not only in sacred spaces and as ritual prescriptions, but also through the information that is disseminated through radio, TV, and the Internet, as well as in consumer culture and political speeches. Beginning with this proposition that our ideas about religion are shaped not only by historical and scriptural legacies, but as well as by material practices and other sundry conditions of mediation, of which our present times supply many, we will reexamine how questions of revelation, belief, spirituality, ethereality, and ritual practice are constituted by these irreducible ways, thus complicating the next separation of religion and secularism, or, for that matter, religion and culture.
Instructor(s): S. Bagaria
Area: Humanities, Social and Behavioral Sciences.

AS.070.377. Ethnographic Writing. 3.0 Credits.
We will closely examine the narrative form and force of a few major works of anthropological writing, and pursue experiments of our own in ethnographic description and expression. Co-listed with AS.070.603.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.070.380. Slumworld: Life in Informal Settlements. 3.0 Credits.
One quarter of the planet’s urban population lives today in slums, shantytowns, favelas, chawls, colonias and other forms of rudimentary settlements (according to UN Habitat). Despite their prevalence throughout the world, these places are still depicted as spaces of informality and abjection, rather than as sites of emergence of innovative -even if disadvantaged-, makeshift ways of producing the city. This course will combine ethnographic and geographical literature, as well as works of fiction and film to explore the lives of squatters and slum-dwellers in many regions of the world and examine in what way their practices, forms of dwelling, sociability, conflict and cooperation are constitutive of the urban experience.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences Writing Intensive.
AS.070.385. From Sexual Nature to Sexual Politics. 3.0 Credits.
This course traces anthropological concern with questions of sexuality. Students will explore anthropological notions of primitive promiscuity, cultural configurations of the correspondence between sex, procreation, and birth, and ideas about sexual rites of passage. The course will end with a discussion of sexual politics in Euro-America and public concern over HIV/AIDS. The course draws on the work of Freud, Malinowski, Meade, Herdt, Povinelli, Rubin, Bersani and Halperin. Cross-listed with Women Gender Studies
Instructor(s): A. Goodfellow
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.405. Urban Ecologies. 3.0 Credits.
Description: This course will explore the city from the vantage point of nature/culture relations and political imagination. It will engage a range of topics including the built environment, urban infrastructure, (de)industrialization and the ways in which urban space shapes and is shaped by power relations, racial dynamics, housing markets, domesticity and the body. As part of the coursework, students will carry out small guided research projects in Baltimore City.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.407. The Anthropology of Design. 3.0 Credits.
From casinos to canoes, algorithms to animal traps, our worlds are bursting with intentional objects. The word design has come to evoke the prestige of such objects, and their power to shape our collective habits and sensations. This course explores the anthropology of designed artifacts and their complex social trajectories. Beginning with philosophical investigations into the relationship between materials, form, and craft, we will proceed through ethnographic case studies of design as expert discourse and ordinary practice. Ultimately we will consider the affinities between the ethnography and design as open-ended and not entirely predictable engagements with the world.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.414. Kinship at the Core. 3.0 Credits.
It is often said that the study of kinship defines anthropology as a distinct discipline within the social sciences. This course tracks the emergence of kinship as a subject and object of anthropological inquiry, and traces some of the transformations that mark the effort to develop theories of kinship (genealogical method, social contract, structural-functionalism, structuralism, psychoanalysis, etc). A sample of authors to be read include: Morgan, Rivers, Malinowski, Radcliffe-Brown, Leach, Levi-Strauss, Pateman, Schneider, Trawick, and Povinelli. Open to Graduate Students.
Instructor(s): A. Goodfellow
Area: Humanities, Social and Behavioral Sciences.

AS.070.417. Political Spirituality. 3.0 Credits.
This course explores forms of political action that have emerged at the interface of modern revolutions with religious traditions. It focuses on the Middle East during the twentieth century and the civil rights struggle in the American south. We will attempt to trace the genealogy of these forms of action in the Islamic and Christian traditions, as well as examine their influence on the political thought of our own time.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences.

AS.070.418. The Comparative Tradition in Anthropology. 3.0 Credits.
Anthropology is often imagined as the study of a particular place and people. But comparative methods date back to the beginnings of the discipline, efforts that are echoed in recent works of global and ambitious scope. In this seminar, we examine the theory and practice of comparison in anthropology, drawn in historical as well as contemporary studies on themes such as art, economy, science, and belief
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.419. Logic of Anthropological Inquiry. 3.0 Credits.
Anthropology is an endeavor to think with the empirical richness of the world at hand, a field science with both literary and philosophical pretensions. This course grapples with the nature of anthropological inquiry, reading classic works in the discipline as well as contemporary efforts to reimagine its foundations. Required for anthropology majors.
Prerequisites: Prereqs: AS.070.273 OR AS.070.317
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.420. Anthropology of Death and Dying. 3.0 Credits.
This course is organized around understanding the experience, representation and management of death and dying at different scales of social life connecting individual biographies with institutional settings.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

AS.070.422. Infrastructure. 3.0 Credits.
This course surveys ethnographies of built networks such as roads, power grids, and water pipelines as sites of cultural meaning, political struggle, and social interaction. We will consider the kinds of collective existence they make possible today, and their relationship to anthropological thought.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences.
Writing Intensive.

AS.070.423. Anthropology of Poetry and Prayer. 3.0 Credits.
What kind of activity is prayer? Are we talking to God(s), to our ancestors, to ourselves? What are the differences between choosing our own words and repeating the words of an established prayer? The course will explore these and similar questions with particular attention to the language of prayers across a number of religious traditions.
Instructor(s): N. Haeri
Area: Humanities, Social and Behavioral Sciences.

AS.070.426. Kinship: Old and New. 3.0 Credits.
We will track the transformations in kinship theory in relation to wider changes in legal theory, biomedicine, and the relation between state and family. In particular we will ask how the concepts of sovereignty, gift, exchange, human and non-human milieus affect notions of relations. Cross-listed with AS.070.639
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.070.430. Violence and Non-Violence: Anthropological Explorations. 3.0 Credits.
What are the conceptual challenges in thinking about violence and non-violence? We will examine these issues through ethnographies of war, collective violence, and domestic violence.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.431. Senses of the State. 3.0 Credits.
This course examines ethnographic approaches to the study of state power and organization. How does a “traditional” ethnographic focus on locality and place help us to theorize the scalar qualities of the “global” neoliberal state? How do anthropologists study the temporal, material and sensory domains through which people make sense of the state as a bureaucratic, governmental and sovereign presence in their lives?
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.436. Vulnerability. 3.0 Credits.
Many in the contemporary world live in states of acute vulnerability. In this course, we will look closely at situations like forced displacement, experience of poverty and injury, environmental devastation, and the politics of social protest. Thinking with ethnography, feminist philosophy, fiction, and film, we will explore whether vulnerability may be taken as a condition to live with rather than one to overcome at any cost.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.445. Health, Disease, Poverty: New Ethnographies from India. 3.0 Credits.
We will study the multiple dimensions of health and disease in the context of poverty and vulnerability in India. The course will focus on institutions and experiences, and ask how the lives of patients and healers connect in local worlds. We will end with some recent controversies on reforming health care in India.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

AS.070.473. Readings of Foucault. 3.0 Credits.
We will do a close reading of selected texts of Foucault to track the concepts of power, subjectivity, government, and care of the self.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

AS.070.485. About Time. 3.0 Credits.
This course will explore time from an anthropological perspective. What is time? An object, a dimension, a sensation? Can we “have” time? What is the relation between power and the control of time? Through readings and discussions of classical and current anthropological theories and ethnographies, we will analyze the meaning, experience and textures of time in different cultural settings. Case studies will explore the US, the West and the Global South, with special emphasis on conceptions of the future: expectations, anticipations, preemption, emergence, possibility. We will study imaginations of temporality and futurity in relation to fields such as politics, custom, finance, security, labor, climate change and so on, looking into the role that emotions play in relation to time.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences.

AS.070.493. Precarity. 3.0 Credits.
How do we understand and engage precariousness and vulnerability in the contemporary world? This seminar explores the notion of precarity in anthropology and social theory. We will explore this notion genealogically asking such questions as: what are the forms of politics arising in relation to new transformations of labor? What are the regional debates in which the notion of precarity has arisen? We will then explore how anthropology has responded to ongoing destruction of whole forms of life, through war, settler colonialism, displacement, and poverty.
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.503. Independent Study. 3.0 Credits.
Instructor(s): Staff.

AS.070.504. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.070.505. Directed Research-Fall. 3.0 Credits.
Instructor(s): Staff.

AS.070.506. Directed Research. 0.0 - 3.0 Credits.
Instructor(s): C. Han; J. Obarrio; M. Degani; N. Haeri; V. Das.

AS.070.507. Directed Readings. 3.0 Credits.
Instructor(s): Staff.

AS.070.508. Directed Readings. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.070.551. Internship-Fall. 1.0 Credit.
Instructor(s): J. Guyer; N. Haeri.

AS.070.552. Internship - Spring. 1.0 Credit.
Instructor(s): D. Poole; J. Guyer; V. Das.

AS.070.561. Senior Essay-Fall. 3.0 Credits.
Instructor(s): Staff.

AS.070.562. Senior Essay - Spring. 3.0 Credits.
Instructor(s): Staff.

AS.070.594. Internship-Anthropology. 1.0 Credit.
Instructor(s): D. Poole; M. Degani; N. Khan.

AS.070.595. Directed Research. 3.0 Credits.
Instructor(s): J. Obarrio; V. Das.

AS.070.596. Independent Study. 3.0 Credits.
Instructor(s): Staff.

AS.070.603. Ethnographic Writing.
We will closely examine the narrative form and force of a few major works of anthropological writing, and pursue experiments of our own in ethnographic description and expression. Co-listed with AS.070.377.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences.

AS.070.605. Anthropology and the Everyday.
Analysis of the everyday groans under the theoretical weight of concepts such “modernity,” “governmentality,” “capitalism,” “globalization” and more recently “security.” What might a sharper focus on the everyday yield in terms of its own analytical frameworks and empirical descriptions? We read some contemporary greats (Foucault, Derrida, Cavell, de Certeau, Lefebvre). Simultaneously we look at how each has been received within ethnography by reading anthropologists in engagement with them (Mahmood, Ivy, Das, Siegel, Harvey). We ask what critical stakes anthropology maintains in relation to the everyday.
Instructor(s): N. Khan
Area: Humanities, Social and Behavioral Sciences.
AS.070.606. Professionalization.
Instructor(s): N. Khan
Area: Humanities, Social and Behavioral Sciences.

AS.070.608. First Year Proposal Writing.
Instructor(s): N. Khan
Area: Humanities, Social and Behavioral Sciences.

What are the conceptual challenges in thinking about violence and non-violence? We will examine these issues through ethnographies of war, collective violence, and domestic violence.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

The seminar will offer a forum for students to reflect on preliminary field research and think further about problems of ethnographic method. We will proceed in the manner of a workshop for ongoing projects. Open to anthropology graduate students only.
Instructor(s): C. Han.

This seminar will address contemporary questions of state and citizenship in the light of colonial and imperial dynamics at the beginning of the twenty-first century: transnational and national sovereignty in relation to local configurations of law, capital and political violence; processes of subsumption, extraction and financialization. Authors include Negri, Arrighi, Harvey, Chakrabarty, Mbembe, Mamdani, Chatterjee, Corolini, Dussel.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences.

AS.070.612. Self, Narrative, and Autobiography.
This seminar takes insight from the idea that the "I" is not simply a pronoun. We will read texts on the self, the fragment, and narrative in anthropology, along with texts that make available different pictures of the self.
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences.

AS.070.615. The Comparative Tradition in Anthropology.
Anthropology is often imagined as the study of a particular place and people. But comparative methods date back to the beginnings of the discipline, efforts that are echoed in recent works of global and ambitious scope. In this seminar, we examine the theory and practice of comparison in anthropology, drawing on historical as well as contemporary studies on themes such as art, economy, science, and belief.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences.

AS.070.616. Proseminar.
This course will consist of close reading of anthropological and philosophical texts to trace some important aspects of the underlying presuppositions of social theory. We will try to see how regions generate both data and theory, and also see how some abiding concerns around the relation between structural formations and formations of subjects are expressed in classical and current anthropological thought.
Instructor(s): V. Das.

The seminar will offer a forum for students to reflect on preliminary field research and think further about problems of ethnographic method. We will proceed in the manner of a workshop for ongoing projects. Open to anthropology graduate students only.
Instructor(s): C. Han.

AS.070.620. Space and Place.
This course explores how concepts of emplacement, location, space, place, and belonging shape—and are shaped by—cultural formations and political imaginations. Readings and class discussions include ethnographies and theoretical texts on planning and struggles over territory, aspirations regarding land and the environment, nature/culture distinctions, housing and the right to the city by authors such as Lefebvre, Massey, Harvey, Foucault, Ingold, Virilio, Bachelard, Tsing, Escobar, and others.
Instructor(s): V. Procupez.

AS.070.621. An Ontological Turn?.
Recent years have seen a number of ambitious and controversial efforts to find, in ontology, a means of surpassing the inherited humanism, culturalism, and essentialism of anthropology. This course will critically examine this proposition of a fundamental "turn" in our thinking, juxtaposing recent work on matters of perspectivism, materialism, relationality, and divinity with earlier attempts in anthropology to grasp being and becoming otherwise.
Instructor(s): A. Pandian.

AS.070.622. Infrastructure.
This course surveys ethnographies of built networks such as roads, power grids, and water pipelines as sites of cultural meaning, political struggle, and social interaction. We will consider the kinds of collective existence they make possible today, and their relationship to anthropological thought.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences.

What kind of activity is prayer? Are we talking to God(s), to our ancestors, to ourselves? What are the differences between choosing our own words and repeating the words of an established prayer? The course will explore these and similar questions with particular attention to the language of prayers across a number of religious traditions.
Instructor(s): N. Haeri
Area: Humanities, Social and Behavioral Sciences.

AS.070.630. Senses of the State.
This course examines how anthropologists study the temporal, material and sensory domains through which people make sense of the state as a bureaucratic, governmental and sovereign presence in their lives.
Instructor(s): D. Poole.

AS.070.634. The End of Nature?.
The End of Nature? We have been hearing critiques of the concept of nature as too pristine since at least Donna Haraway’s Cyborg Manifesto and Bruno Latour’s We Have Never Been Modern. The call has been for a mode of ecological thinking without the encumbrance of nature. Through an examination of some of the tracks that nature has left within the anthropological archives and kindred debates within philosophy, this course attempts a revivification of nature for our present. Readings include Mauss, Rappaport, Levi-Strauss, Bateson, Emerson and Whitehead.
Instructor(s): N. Khan.
AS.070.636. Vulnerability.
Many in the contemporary world live in states of acute vulnerability. In this course, we will look closely at situations like forced displacement, experience of poverty and injury, environmental devastation, and the politics of social protest. Thinking with ethnography, feminist philosophy, fiction, and film, we will explore whether vulnerability may be taken as a condition to live with rather than one to overcome at any cost.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

We will track the transformations in kinship theory in relation to wider changes in legal theory, biomedicine, and the relation between state and family. In particular, we will ask how the concepts of sovereignty, gift, exchange, human and non-human milieus affect notions of relations. Open to undergraduate anthropology majors with instructors approval.
Co-listed with AS.070.426
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

AS.070.642. Anthropology of Design.
From casinos to canoes, algorithms to animal traps, our worlds are bursting with intentional objects. The word design has come to evoke the prestige of such objects, and their power to shape our collective habits and sensations. This course explores the anthropology of designed artifacts and their complex social trajectories. A philosophical investigations into the relationship between materials, form, and craft, we will proceed through ethnographic case studies of design as expert discourse and ordinary practice. Ultimately we will consider the affinities between the ethnography and design as open-ended and not entirely predictable engagements with the world.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.650. Post-fieldwork.
Open to Anthropology graduate students only.
Instructor(s): N. Khan
Area: Humanities, Social and Behavioral Sciences.

AS.070.658. Intimacy and Corruption.
Course takes problem of corruption as an ethnographic site from which we can explore how concepts of visibility, secrecy, intimacy and transgression inform political life. We will examine how ideas of intimacy and propriety are expressed in public scandals of corruption, as well as the forms of anxiety that surround routine practices of bribery, influence peddling and enticement.
Instructor(s): D. Poole
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.659. Proposal Writing.
The seminar will offer a forum for students to discuss research projects, prepare grant proposals and think further about issues of ethnographic methodology and writing. Open to Anthropology graduate students only.
Instructor(s): N. Khan
Writing Intensive.

AS.070.671. Political Anthropology.
This course explores anthropological debates regarding politics and the political. Through readings drawn from both recent and “classic” ethnographies of the political, we will trace how anthropologist have engaged issues of hierarchy, differentiation, power, suasion, command, collectivity, and voice in their accounts of social and cultural worlds.
Instructor(s): D. Poole
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.673. Readings of Foucault.
We will do a close reading of selected texts of Foucault to track the concepts of power, subjectivity, government, and care of the self.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

AS.070.675. Before the Law.
Foundations of law and the political in classical political anthropology and postmodern philosophy. Kinship, custom, magic, sacrifice and war as prepolitical realms. State of nature, exception, and force of law; biopolitics, micropolitics and segmentarity. Readings: Africanist ethnography, Clastres, Sahlins, Deleuze, Derrida, Agamben, Benjamin, Kafka.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences.

AS.070.677. Anthropology of Death and Dying.
This course is organized around understanding the experience, representation and management of death and dying at different scales of social life connecting individual biographies with institutional settings.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

AS.070.680. Reading Course in the History of Anthropology: Revolutions and Recuperations.
This course provides a selective, disciplinary overview of anthropological theory as both a plural field of knowledge and as a distinctive mode of formulating questions about history, society and life.
Instructor(s): J. Guyer
Area: Humanities, Social and Behavioral Sciences.

How do different ways of harnessing energy shape life and environment? This course delves into the social, political, even philosophical properties of oil, coal, sunlight sugar, and other sources that fuel human activity. Through these topics, we will consider the cultural meaning of concepts such as charge and expenditure, work and waste.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.682. Readings in Anthropology.
In this course we will engage classical texts from the anthropological archives and explore debates and contemporary salience.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.
AS.070.685. About Time.
This course will explore time from an anthropological perspective. What is time? An object, a dimension, a sensation? Can we “have” time? What is the relation between power and the control of time? Through readings and discussions of classical and current anthropological theories and ethnographies, we will analyze the meaning, experience and textures of time in different cultural settings. Case studies will explore the US, the West and the Global South, with special emphasis on conceptions of the future: expectations, anticipations, preemption, emergence, possibility. We will study imaginations of temporality and futurity in relation to fields such as politics, custom, finance, security, labor, climate change and so on, looking into the role that emotions play in relation to time. 
Instructor(s): J. Obarrio 
Area: Humanities, Social and Behavioral Sciences 
Writing Intensive.

AS.070.693. Precarity.
How do we understand and engage precariousness and vulnerability in the contemporary world? This seminar explores the notion of precarity in anthropology and social theory. We will explore this notion genealogically asking such questions as: what are the forms of politics arising in relation to new transformations of labor? What are the regional debates in which the notion of precarity has arisen? We will then explore how anthropology has responded to ongoing destruction of whole forms of life, through war, settler colonialism, displacement, and poverty. 
Instructor(s): C. Han 
Area: Humanities, Social and Behavioral Sciences 
Writing Intensive.

AS.070.698. Defining Region.
This course is open to anthropology graduate students only and is to be run on a workshop model. It is to help those students writing their regional essay for the comprehensive exams to acquire expertise in regional debates and literature relevant to their field research. Our understanding of regions is one of cross-cutting concepts and questions rather than geographical framings alone. After identifying a concept or question, each student will create an annotated bibliography, trace the shape of arguments as they emerge within the readings, create an outline and work toward a draft of the final essay. 
Instructor(s): C. Han 
Area: Humanities, Social and Behavioral Sciences.

AS.070.719. Suspicious Interlocutors Part II: Psychoanalysis and Anthropology.
This course is a continuation of Anthropology AS.070.718, offered in Spring 2013. Students will continue the previously begun investigation of the conversation between anthropology and psychoanalysis, which proves long-standing and often as contentious as it is complementary. The course will tack back and forth between ethnographic materials inspired and informed by psychoanalytic insights, and the use of ethnographic sources and anthropological materials in psychoanalytic writings. Students will engage works from such scholars as Freud, Lacan, Cavell, Klein, Derrida, Siegel, Das, Reynolds, Levi-Strauss, Seremetakis. 
Instructor(s): A. Goodfellow 
Area: Humanities, Social and Behavioral Sciences.

AS.070.801. Dissertation Research. 
Instructor(s): Staff.

Instructor(s): Staff.

AS.070.866. Directed Readings and Research. 
Instructor(s): A. Pandian.

AS.070.867. Directed Reading and Research. 
Instructor(s): C. Han; N. Khan.

AS.070.869. Directed Reading and Research. 
Instructor(s): A. Pandian.

AS.070.870. Directed Readings and Research. 
Instructor(s): M. Degani 
Area: Humanities, Social and Behavioral Sciences.

AS.070.871. Directed Reading and Research. 
Instructor(s): V. Das.

AS.070.872. Directed Readings and Research. 
Instructor(s): V. Das.

AS.070.874. Directed Readings and Research. 
Instructor(s): N. Haeri.

AS.070.879. Directed Reading and Research. 
Instructor(s): J. Guyer.

AS.070.880. Directed Readings and Research. 
Instructor(s): J. Guyer.

AS.070.883. Directed Reading and Research. 
Instructor(s): N. Haeri.

AS.070.884. Dir Readings & Research. 
Instructor(s): J. Obarrio.

AS.070.885. Directed Reading and Research. 
Instructor(s): D. Poole.

AS.070.886. Dir Readings & Research. 
Instructor(s): D. Poole.

AS.070.892. Directed Readings and Research. 
Instructor(s): N. Khan.

AS.070.893. Directed Reading and Research. 
Instructor(s): J. Obarrio.

EN.601.685. Probabilistic Models in the Visual Cortex. 3.0 Credits. 
The course gives an introduction to computational models of the mammalian visual cortex. It covers topics in low-, mid-, and high-level vision. It briefly discusses the relevant evidence from anatomy, electrophysiology, imaging (e.g., fMRI), and psychophysics. It concentrates on mathematical modelling of these phenomena taking into account recent progress in probabilistic models of computer vision and developments in machine learning, such as deep networks. [Applications or Analysis]. Programming experience (Python preferred). 
Instructor(s): A. Yuille 
Area: Quantitative and Mathematical Sciences.

Cross Listed Courses

History of Art

AS.010.382. The Politics of Display in South Asia. 3.0 Credits. 
Through examining collecting, patronage, colonial exhibitions, and museums, this course examines how South Asia has been constructed in practices of display. Themes: politics of representation, spectacle, ethnography, and economies of desire related to colonialism and the rise of modernity. Cross-list with Anthropology, Museums and Society and Political Science. 
Instructor(s): R. Brown 
Area: Humanities 
Writing Intensive.
AS.010.410. The Epistemology of Photography. 3.0 Credits.
This seminar will ask how photography produces ways of knowing: how does photography’s reality-effect shape its dissemination and absorption? Is photography’s emergence during the colonial era coincidental or catalytic? How is memory (re)constructed in a photography-saturated world? What kinds of histories does photography encourage and discourage? Is a photograph an object? We will read across disciplines (literature, anthropology, history, history of art, political science, theory) to investigate the epistemology of photography and the photograph.
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

AS.010.607. The Epistemology of Photography.
This seminar will ask how photography produces ways of knowing: how does photography’s reality-effect shape its dissemination and absorption? Is photography’s emergence during the colonial era coincidental or catalytic? How is memory (re)constructed in a photography-saturated world? What kinds of histories does photography encourage and discourage? Is a photograph an object? We will read across disciplines (literature, anthropology, history, history of art, political science, theory) to investigate the epistemology of photography and the photograph.
Instructor(s): R. Brown.

History
AS.100.355. Islam between History and Anthropology. 3.0 Credits.
Co-taught by an anthropologist and a historian, this course will explore recent scholarly debates about--and critiques of--the representations of Islam and Muslim societies.
Instructor(s): N. Khan; T. Shepard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.365. Culture & Society in the High Middle Ages. 3.0 Credits.
This course will treat the flourishing of culture and society in the High Middle Ages (11-14th centuries). Topics covered include the emergence of feudal society and literature, the economic, social and cultural revival of Europe in the 11th and 12th centuries, the Renaissance of the twelfth century and the growth of scholasticism and the University, and the development of feudal monarchies in England and France.
Instructor(s): G. Spiegel
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Near Eastern Studies
AS.130.126. Gods and Monsters in Ancient Egypt. 3.0 Credits.
To provide a basic introduction to Egyptian Religion, with a special focus on the nature of the gods and how humans interact with them. We will devote particular time to the Book of the Dead and to the “magical” aspects of religion designed for protective purposes.
Instructor(s): R. Jasnow
Area: Humanities.

AS.130.351. The Emergence of Civilization: A Cross-Cultural Examination. 3.0 Credits.
A comparative study of the origins of urban, literate civilizations in five culture areas: Mesopotamia, China, the Indus Valley, Egypt, and Mesoamerica. For each area, we will review the physical setting, the archaeological and textual evidence for the development of states and urban civilization, and theories advanced to explain the rise (and eventual collapse) of these complex societies.
Instructor(s): G. Schwartz
Area: Humanities, Social and Behavioral Sciences.

AS.130.376. Ancient Magic and Ritual. 3.0 Credits.
This course will introduce students to the vast body of rituals that were practiced and performed in antiquity, with a particular emphasis on rituals from ancient Mesopotamia, Egypt, and the Hebrew Bible. In addition to examining rituals from a comparative perspective, anthropological and sociological studies of ritual will be read and discussed to shed light on the social, cultural, and political significance of ritual in the ancient world and beyond.
Instructor(s): P. Delnero
Area: Humanities.

AS.130.387. The Poetics of Biblical Prose and Verse. 3.0 Credits.
An exploration of how ancient Israelite techniques of literary textual and inter-textual patterning contributes to cohesion and meaning in biblical prose and verse. Attention will be given to the distinguishing characteristics of Hebrew verse in relation to prose, and to a range of different kinds of prose in Israelite literature. These poetic forms will be exemplified in close readings of selected texts from the Hebrew Bible in English.
Instructor(s): D. Gropp
Area: Humanities.

AS.131.635. Seminar: Near East Archaeology.
Topic varies but can include the archaeology of Mesopotamia, Syria, or Palestine, or thematic discussions (e.g., on ideology, state collapse, etc.).
Instructor(s): G. Schwartz
Area: Humanities.

Archeology
AS.136.101. Introduction To Archaeology. 3.0 Credits.
An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.
Instructor(s): G. Schwartz
Area: Humanities, Social and Behavioral Sciences.

History of Science Technology
AS.140.346. History of Chinese Medicine. 3.0 Credits.
Students will study the most recent anthropological, philosophical, and historical scholarship on medicine in traditional and modern Chinese society. They will approach the topic from several angles including medical pluralism, the range of healers, domestic and literate medicine, gender, emergence of new disciplines, public health and the history of disease. The course relies on secondary sources and primary sources in English translation. Cross-listed with East Asian Studies.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
This course will offer a survey of classical and contemporary trends in critical theory through the prism of the law. The readings will trace the development of two modes of critical reflection emerging from Kant's philosophical project, critique and genealogy, exploring the tensions between them through the study of categories such as judgment, case, and jurisdiction. We will examine how these categories themselves reflect the question of "modernity" and the Enlightenment as that question is posed and answered by thinkers from Kant to Foucault and Habermas and beyond. To ground this study, we will focus on critical engagements with human rights, property, and institutional justice around the world. Within an arch of readings that goes from Kant to Butler, the course will include key texts by Hegel, Marx, Benjamin, Horkheimer, Adorno, Marcuse, Habermas, Foucault, and Nancy, as well as texts drawn from critical legal studies and the anthropology of law and justice. There are no prerequisites for this interdisciplinary course. To receive credit, students will be required to attend seminar, prepare for class discussions, and turn in a 20-30 page final research paper, a draft of which will be presented at a workshop at the end of the year.

Instructor(s): A. Pandian; J. Bennett.

AS.190.609. Law, Critique, Genealogy.

This course explores debates in contemporary environmental political thought concerning humanity's relationship to nature in the Anthropocene. The Anthropocene refers to the era in which "human" activity becomes a force of "nature"—when the impact of human activity on natural processes manifests itself in the stuff of the Earth. For many of us, these planetary transformations are hardly noticeable in day-to-day life, but they are dramatic: we are living through the Earth's sixth mass extinction. What is our relationship to these transformations? Do we have the power to stop them, or at least to minimize their harmful effects? Course readings and films introduce multiple visions of the human/nature relationship and examine the responses they recommend to these and other questions. The political stakes of these visions are brought to light as we consider: How do visions of the human/nature relationship shape and texture core political concepts like freedom, agency, responsibility, and progress? What do they suggest about the strategies most likely to motivate action amid the uncertainty of the Anthropocene? How do these visions subtly (and not so subtly) relegate some to the realm of "nature" so that others can be classified as "human"?

Instructor(s): S. Spinner

AS.191.344. Belonging to Nature in the Anthropocene. 3.0 Credits.

AS.211.174. Media of Propaganda. 3.0 Credits.

Today, promoting a particular political or personal point of view is not viewed as "propaganda," but rather as building a community of equally minded people. But where do we draw the line, and when does the use of a medium in service of a certain message become intrusive and misleading? What role do democracy and cultural values play in this use or abuse of media? In this class the term "propaganda" will be evaluated carefully and applied to such historical media case studies as the informational use of the radio in World War One, Leni Riefenstahl's Nazi propaganda films, the legendary success of advertisement campaigns in the 1950s and 1960s, the AIDS movement and other mobilization strategies from the 1980s to the 1990s, and the new values of friendship and propaganda in our current facebook nation.

Instructor(s): B. Wegenstein

Area: Humanities.

AS.211.337. Wandering Jews? Jewish Migration in Film and Literature. 3.0 Credits.

Migration in all its forms has played a major role in shaping Jewish identity throughout history. From the Biblical exodus from Egypt through the beginnings of the diaspora under the Romans to the massive European Jewish immigration to America in the late 19th and early 20th centuries to the founding of the state of Israel, the migrations of Jews have also had a major place in Jewish literature. Going all the way back to the Bible, but focusing on the 20th century, this course will explore the ways in which literature and film represent the experience of migration, whether negative (compelled by expulsion or violence); positive (lured by economic or social opportunity): or somewhere in-between. We will examine poetry, plays, prose and film in Yiddish, German, Hebrew, and English (all in translation) on aspects of Jewish migration including the social and political factors motivating migration from the countryside to the shtetl (town) to the city and from Central and Eastern Europe to the Americas, Palestine, and Israel. Issues under discussion will include: adaptation and assimilation; minority rights; what is the relationship of old and new or major and minor languages and literatures?; what is the place of tradition and heritage in a diasporic context? We will also consider the resonances between contemporary debates on migration and historical examples of these issues as they are reflected in literature and film.

Instructor(s): B. Wegenstein

Area: Humanities

Writing Intensive.

AS.211.641. Women Filmmakers from the Margins.

Filmaking remains an overwhelmingly male-dominated profession, but women are making significant inroads, and in so doing are leaving their distinctive mark on the medium. In this seminar we will examine the films of a group of women auteurs (those who write and direct their own films) who have endeavored to speak from the margins—be they social, geographical, or sexual—and whose work has challenged mainstream cinematic norms. The filmmakers whose work we will analyze may include Jane Campion, Australia; Aurora Guerrero, Mexico-USA; Claudia Llosa, Peru; Mira Nair, India-USA; Marialy Rivas, Chile; So Yong Kim, Korea.

Instructor(s): B. Wegenstein

Area: Humanities

Writing Intensive.
AS.211.754. Modernist Primitivism.
This course will explore the aesthetics and politics of primitivism in European modernity, focusing on the visual arts and literature in German and Yiddish, but looking at the wider European context, including France and Russia. We will begin with the backgrounds of primitivism in Romanticism, looking especially at its ethnographic and colonial sources. We will then focus on the presence of anthropological and ethnographic discourses within various registers of modernist thought, literature, and visual culture, with special attention to visual and literary primitivism. Our central concerns will include: the attempt to create a modernist aesthetics grounded in ethnography; the primitivist critique of modernity; the place of primitivism in the historical avant-garde; the development of the notion of “culture” in modernity; and the aesthetics of modern ethnic and national identity. &nbsp;Key thinkers, artists, and writers to be considered include Herder; Gauguin; Picasso; Wilhelm Worringen; Carl Einstein; Hannah Höch; and Emil Nolde.
Instructor(s): S. Spinner
Area: Humanities.

AS.213.635. Anthropology and Modernism.
This course will examine the reciprocal relationship between modernism and anthropology in Western and Central Europe, including examples from French, German, and Yiddish contexts. We will focus on the presence of anthropological and ethnographic discourses within various registers of modernist thought, literature, and visual culture, with special attention to visual and literary primitivism. We will also consider attempts by ethnographers to shape their practice in a modernist mold. Our central concerns will include the attempt to create a modernist poetics grounded in ethnography and the relationship between anthropological theory and ethnographic praxis in the modernist understanding of “culture.”
Instructor(s): S. Spinner
Area: Humanities.

AS.215.315. Literature of the Great Recession. 3.0 Credits.
The Great Recession—sometimes called the financial crisis or the economic crisis of 2008—brought financial markets to a halt and created significant political turmoil across the North Atlantic. But its impact on culture, and literature especially, has often been ignored. This seminar will travel across Europe, from Dublin to Madrid, from London to Reykjavik in order to examine how literature has registered this most recent economic crisis. We will focus on how crisis is narrated and the ways in which literary works have managed to provide a voice for marginalized social, economic, and political demands.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.406. Novelist Intellectuals. 3.0 Credits.
What does a novelist’s op-ed about economics have to do with her literary writing? In what ways does a fiction writer’s essays on the environment inform how we read her novels? What happens when we find the political opinions of a writer objectionable? This undergraduate seminar will consider what the Spanish writer Francisco Ayala termed “novelist intellectuals,” that is, literary writers who actively participate in a society’s public sphere. Considering writers from Madrid to New York, from London to Buenos Aires, we will ask how one should hold a novelist’s fictional and non-fictional writings in the balance and explore ways of reading that allow us to consider the public intellectual side and the aesthetic side of a novelist together.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.412. Populism. 3.0 Credits.
What do Hugo Chávez, Marine Le Pen, and Donald Trump have in common? According to many from across the political spectrum, they are all populists. But what is populism, exactly, and how can it describe such disparate phenomena as left-wing social movements, xenophobic anti-immigrant policies, and economic redistribution? This advanced seminar will examine the history, culture, and political theory of populism. We will pay special attention to the resurgence of populism after the Great Recession and examine a number of cases from Latin America, Europe, and the United States.
Instructor(s): B. Seguin.

How should one study contemporary literature and culture? Is “the contemporary” a period in and of itself? Does it require a distinct conceptual approach? This graduate seminar will examine various approaches that have emerged since Michel Foucault called his genealogies a “history of the present.” We will pay special attention to contemporary literature and culture’s most distinguishing feature today: crisis. Considering theories of crisis and “the contemporary” together, the course will explore how living in a time of overlapping crises—economic, political, social, cultural, environmental, and others—affects the way we interpret the world.
Instructor(s): B. Seguin
Area: Humanities.

Sociology
AS.230.367. Islamic Finance. 3.0 Credits.
Today, Islamic finance is a global industry comprising nearly $2 trillion in assets, with hubs from Kuala Lumpur to Dubai to London. But half a century ago, nothing called “Islamic finance” existed. So where did Islamic finance come from? Why is it growing so fast? And what does it mean for finance to be Islamic? We discuss the ban on riba in the Quran and hadith, finance in early and medieval Islamic societies, petrodollars and the birth of Islamic banking in the 1970s, the rise of Islamic capital markets since 2000, contemporary shariah-compliant financial structures, and the constitution of piety through financial practice.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences.

Comparative Thought and Literature
AS.300.320. Lover’s Discourse. 3.0 Credits.
Much of what we know about love and desire we owe to fiction’s ability to evoke these experiences. Consider for example that the publication, in Germany, of The Sorrows of Young Werther inspired young men across Europe to dress and behave just like him. We will study in this course a selection of love stories chosen because they break the mold and question their conventions. Taking a critical distance from these tales of seduction, we will examine not only the manifestations and meanings of love, but also the configurations of gender they inspire and reflect. Indeed, just as nowadays film and television represent, as well as mold, our identities as desiring subject, fictions from the eighteenth-century onwards have shaped our current understanding of gendered subjectivities. The readings for this seminar (all available in English) include: Austen, “Persuasion”; Balzac, “The Girl with the Golden Eyes” and "Sarrasine"; Barthes, "Lover’s Discourse"; Goethe, "The Sorrows of Young Werther"; Mann, "Death in Venice"; Rousseau, excerpts from "Julie or The New Heloise"; Sulzer, "A Perfect Waiter"; Winterson, "Written on the Body".
Instructor(s): E. Ender
Area: Humanities.
East Asian Studies

AS.310.108. Introduction to Chinese Fiction and Drama. 3.0 Credits.
This course will introduce Chinese fiction and drama from the Tang dynasty (618–906) to the early Republican period (1911–1949), such as the romantic dramas of Tang Xianzu and the uncanny tales of Pu Songling. Students will draw upon these vibrant literary genres and the cultural and socio-historical events that shaped imperial China. Key topics include story-telling, romance, urban culture, gender, reincarnation, and many more. Students will acquire skills in how to read, analyze and discuss the rich legacy of Chinese fiction and drama in translation and to think critically about these writings. Reading materials are all in English.
Instructor(s): F. Joo
Area: Humanities.

AS.310.309. Monsters, Demons, and Ghosts: Folklore and Festival in Japan. 3.0 Credits.
This course examines popular narratives and festivals from historical through contemporary Japan. Rather than traditional sources (canonical works, philosophical doctrines, and high art), it focuses on non-traditional modes of expression: oral histories, epic tales, local legends, stories of the supernatural, music, religious festivals, manga, anime, and film. Through analyses of these mediums, students explore the underlying belief structures that have shaped ideas concerning death and the afterlife, moral ethics, and the spiritual realm in Japan. The course also tackles issues concerning the intellectual construct of the ‘folk’ and folk religion. Who are the folk? How does this concept relate to regional versus national identity, civilized versus so-called primitive populations, premodern versus modern categories? Students will engage these questions through active discussions in the classroom, in-class writing exercises, mini-presentations, and two papers.
Instructor(s): C. Carter
Area: Humanities
Writing Intensive.

Program in Latin American Studies

AS.361.331. Drug wars, violence and illicit lifeworlds in Latin America. 3.0 Credits.
Drawing on ethnographic and historical sources, this course will introduce anthropology as an invitation for students to re-conceptualize and deepen their understanding of the so-called “War on Drugs” as a cultural, social and political formation in Latin America.
Instructor(s): J. Moreno Garcia
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Study of Women, Gender, Sexuality

AS.363.350. Gender, Sexuality, and Religion: Muslim (In)Visibilities. 3.0 Credits.
“Muslim (In)Visibilities” focuses on gender and sexuality through Orientalism. It considers representations of Muslim bodies within popular Western discourses and what such (in)visibilities are productive of.
Instructor(s): M. Banahi
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.363.417. Internship/Practicum: Critical Theory and the Possibility of Social Justice. 4.0 Credits.
This course combines a weekly seminar with 4 hours per week in a Baltimore social justice organization, coordinated by the JHU Center for Social Concern. Class discussions draw on readings in ethnography and feminist, queer and critical race studies to address topics such as; race, class and gender inequality, neoliberal development, health, institutional violence and politically engaged research.
Instructor(s): A. Krauss
Area: Humanities, Social and Behavioral Sciences.

Program in Museums and Society

AS.389.302. The Virtual Museum. 3.0 Credits.
Course draws on both classic readings in material culture and emerging theories of the digital to consider how the internet has changed objects and the institutions that collect, preserve, display and interpret them. Students will contribute to an established virtual museum and create their own.
Instructor(s): J. Kingsley
Area: Humanities.

AS.389.335. Recreating Ancient Greek Ceramics. 4.0 Credits.
This hands-on course in experimental archaeology brings together undergraduate and graduate students across disciplines to study the making of Athenian vases. Students work closely with expert ceramic artists, and in consultation with art historians, archaeologists, art conservators, and materials scientists to recreate Greek manufacturing processes.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.440. Who Owns Culture?. 3.0 Credits.
This seminar explores the complicated, often explosive concept of cultural property, including questions surrounding the ownership, preservation, and interpretation of artifacts, monuments, heritage sites, and living traditions. Cross-listed with Anthropology and History of Art.
Instructor(s): E. Rodini
Area: Humanities, Social and Behavioral Sciences.

AS.389.450. Readings in Material Culture. 3.0 Credits.
Objects, things, "stuff"- this seminar will pursue classic texts and emerging methodologies to explore the myriad ways materials and materiality have been theorized across disciplines. For graduate/advanced undergraduate students.
Instructor(s): E. Rodini; R. Brown
Area: Humanities.

AS.389.650. Readings in Material Culture.
Objects, things, "stuff"- this seminar will pursue classic texts and emerging methodologies to explore the myriad ways materials and materiality have been theorized across disciplines. For graduate/advanced undergraduate students.
Instructor(s): E. Rodini; R. Brown
Area: Humanities.
Environmental Health and Engineering
EN.570.285. Understanding Aid: Anthropological Perspectives for Technology-Based Interventions. 3.0 Credits.
This course combines anthropological perspectives with the discussion and examination of technology-based interventions in the field of development and aid policies, with particular focus on activities related to water resources, sanitation, and hygiene. Readings and discussions analyze some of the theoretical, historically rooted, and practical issues that challenge those who hope to provide effective aid. A key aim of this course is to provide students with better understanding of cultural, social, environmental and economic issues relevant to technical intervention in developing countries.
Instructor(s): E. Cervone; W. Ball
Area: Humanities, Social and Behavioral Sciences.

Archaeology
http://krieger.jhu.edu/archaeology/
The major in archaeology is an interdepartmental program that introduces students to archaeological theory, the analysis of archaeological materials, and the results of archaeological research in prehistoric and early historic periods in the Old and New Worlds. Archaeology studies human societies through examination of their material culture (physical remains), considering such issues as human subsistence, interaction with climate and physical environment, patterns of settlement, political and economic organization, and religious activity and thought. The field allows for the study of the entirety of human experience from its beginnings to the present day, in every region of the world and across all social strata.

Requirements for the B.A. Degree
Requirements for the major include 13 courses (39 credits). These can be selected from a diversity of offerings available from different departments. In addition, students must take a core of three courses consisting of Introduction to Archaeology, World Prehistory, and Archaeological Method and Theory. Except for some field experiences, majors must complete all courses required for the major for a letter grade and receive a grade of C- or higher.

Core Courses
- AS.136.101 Introduction To Archaeology 3
- AS.130.177 World Prehistory: An Anthropological Perspective 3
- AS.130.354 Archaeological Method and Theory 3
- AS.131.654
- Any Anthropology course numbered AS.070.1xx-4xx 3
- Six archaeology courses, both regionally specific and/or methodologically/theoretically advanced (POS-Tag ARCH-ARCH) 18
- Three additional related courses, to be decided in conjunction with the student's advisor, pertinent to the archaeological issues the student has focused on. (POS-Tag ARCH-RELATE) 9

Total Credits 39

Sample Program of Study
In addition to the example plan as shown below, students are required to complete significant archaeological field experience. This is commonly done during the summer(s) after sophomore and/or junior year(s).

Freshman
Fall
- AS.136.101 Introduction To Archaeology 3
- AS.130.177 World Prehistory: An Anthropological Perspective 3

Sophomore
Fall
- Any Anthropology course numbered AS.070.1xx-4xx 3
- AS.130.354 Archaeological Method and Theory 3

Junior
Fall
- Archaeology course #1 3
- Archaeology course #2 3
- Additional related course #1 3
- Additional related course #2 3

Senior
Fall
- Archaeology course #5 3
- Additional related course #3 3

Total Credits: 39

Honors Program
Archaeology majors have the option of writing an honors thesis under the supervision of a faculty member. The thesis is based on an original research problem developed in conjunction with that faculty member. Successful completion of the thesis (B+ or higher) will result in the conferring of a BA with honors.

Students entering Fall 2014 and later must pass 6 credits (2 semesters: 130.510 and 130.511) of honors thesis to earn honors in the Archaeology Major. These credits are in addition to and exceed the number of credits needed for the major.

Students who are interested in pursuing an honors thesis should begin to discuss possibilities with a faculty advisor as early as possible and no later than during the second semester of Junior year. A proposal for the thesis must be approved by the faculty advisor before the student registers for the courses and no later than the end of the second semester of the Junior year.

The student will work closely with the faculty advisor, setting a timeline for completing research and submitting drafts of the thesis. A full draft of the thesis is due by the end of March of the Senior year; if the student wants to be listed as receiving honors on the commencement program.
The final version of the thesis must be handed in by the last day of classes.

Program Learning Goals for the Archaeology Major
1. Acquire the basic skills for understanding theory, interpretation, and methods in archaeology.
2. Develop an ability to analyze archaeological data through the reading and interpretation of archaeological publications and study of primary data.
3. Conduct analyses and interpretations of material culture in precise, well-organized, and persuasive language, both orally and in writing.
4. Acquire interdisciplinary knowledge of different past human cultures.
5. Gain significant knowledge of the material culture of at least one region or thematic issue.
6. Acquire on-site experience and expertise in archaeological method through fieldwork.

For current faculty and contact information go to http://krieger.jhu.edu/archaeology/faculty-directory/

Faculty
Director
Glenn Schwartz
Whiting Professor of Archaeology (Near Eastern Studies): Near Eastern archaeology, archaeological method and theory.

Professors
Betsy Bryan
Alexander Badawy Chair in Egyptian Art and Archaeology (Near Eastern Studies): Egyptian archaeology and art.

Marian Feldman

Lisa de Leonardis
Austen-Stokes Professor (History of Art): art and archaeology of the ancient Americas.

Matthew Roller
(Classics): Roman material culture and history.

Assistant Professors
Michael Harrower

Pier-Luigi Tucci
(History of Art): Roman art and archaeology.

Senior Lecturer
Emily S.K. Anderson
(Classics and History of Art)

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.136.101. Introduction To Archaeology. 3.0 Credits.
An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.
Instructor(s): G. Schwartz
Area: Humanities, Social and Behavioral Sciences.

Cross Listed Courses
History of Art
AS.010.105. Art of the Ancient Americas. 3.0 Credits.
This course provides a basis for the study of ancient Americas art and architecture and a broad exposure to the issues relevant to its study. Select visual arts within the primary regions of Mexico and Central America will be emphasized. In conjunction with the Baltimore Museum of Art (BMA) and the JHU Archaeological Museum (JHAM), students will participate in on-site study of the collections.
Instructor(s): L. Deleonardis
Area: Humanities.

AS.010.236. Palaces, Temples and Tombs in Mesopotamia. 3.0 Credits.
Mesopotamia, the “land between the rivers,” is considered the cradle of civilization. Its earliest urban centers appeared by 3500 BCE in the region of modern-day Iraq, Iran, and Syria. Along with urbanism came the emergence of temples and palaces as large-scale elite institutions (along with written records). Their arts manifest some of the earliest complex representations and follow a vibrant course for several millennia. The first empires marshaled large armies and amassed fabulous riches. Complex religious and ritual ideologies were expressed in the art and architecture. And all has been revealed by the archaeologist’s spade. This class explores the art and architecture of Mesopotamia (ancient Sumer, Babylonia and Assyria) from 3500 to 330 BCE. Emphasis is placed on the relationship between the arts and ancient society in order to enable students to acquire the skills for accessing and appreciating ancient civilizations.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.315. Art of the Assyrian Empire, 1000-600 BCE. 3.0 Credits.
The Assyrian Empire dominated the ancient world from 1000-612 BCE, stretching from Iran to Egypt and laying the foundation for the later Persian and Macedonian empires. With imperial expansion came an explosion of artistic production ranging from palace wall reliefs to small-scale luxury objects. This course provides an integrated picture of the imperial arts of this first great empire, situating it within the broader social and political contexts of the first millennium BCE.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.365. Art of the Ancient Andes. 3.0 Credits.
The ancient visual arts of Andean South America and their respective cultural contexts form the basis of this course. In conjunction with the Baltimore Museum of Art and the Johns Hopkins Archaeological Museum students will have access to collections for study.
Instructor(s): L. Deleonardis
Area: Humanities.
AS.010.366. Native American Art. 3.0 Credits.
The works of Native American artists are examined and discussed in their respective social and historical contexts. Such works include Hopewell stone sculpture, Mimbres pictorial painting, and Tlingit guardian figures. We examine the concept of sacred landscape through analysis of monumental earthworks and effigy mounds, Anasazi architecture, and rock art. In conjunction with the Baltimore Museum of Art (BMA), and Johns Hopkins Special Collections, students will have access to collections for study.
Instructor(s): L. Deleonardis
Area: Humanities

AS.010.389. The Stone and the Thread. 3.0 Credits.
Inka architecture in its social, historical and cultural contexts forms the basis of this course. Shared forms and ideas implicit in the fiber arts offer comparative points for analysis and discussion.
Instructor(s): L. Deleonardis
Area: Humanities
Writing Intensive.

AS.010.407. Ancient Americas Metallurgy. 3.0 Credits.
Centering on a series of case studies, this course addresses the technology, aesthetics, and social significance of metals. We trace the development of metals from 1500 BCE in Chile and Peru, to the 16th century in Colombia and central Mexico, pausing to examine its forms and meanings in various cultural contexts, and the ideas that inform its value. In conjunction with the Baltimore Museum of Art (BMA), the Walters Art Museum (WAM), and the Johns Hopkins Archaeology Museum (JHUAM), students will have access to ancient metal works for study.
Instructor(s): L. Deleonardis
Area: Humanities

AS.010.421. Creating Sacred Space in the Ancient and Medieval World. 3.0 Credits.
What makes a space sacred? How is it different from other spaces? This seminar explores the various means - visual, artifactual, architectural, and performative - of creating sacred space in the ancient and medieval worlds of the Near East and Mediterranean. Possible cases for study include early Sumerian temples, state-sponsored Assyrian temples, votive deposits, Greek sanctuaries, sanctuaries and landscape, early medieval Jewish, Christian, and Islamic cult buildings, cave sanctuaries, pilgrimage sites, icons and sacred space.
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

AS.010.470. Power and Politics in Assyrian Art. 3.0 Credits.
Assyria, centered in northern Iraq, created one of the world's first great empires that dominated the ancient Near Eastern world from around 900 to 612 BCE. In concert with imperial expansion came an explosion of artistic production ranging from palace wall reliefs to small-scale luxury objects. This seminar examines the close relationship between the arts and politics in the Assyrian empire. Some themes that will be explored are: historical narrative, text and image, portable luxury arts and gender, politics and religion. The course will engage in close visual analysis of the ancient materials and readings of critical scholarship.
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

Biology
AS.020.365. Intro To Human Skeleton. 3.0 Credits.
This course will provide a basic understanding of human skeletal biology, including bone composition and bone growth, recognition of skeletal elements, functional anatomy of different skeletal systems, comparative anatomy, and forensic anthropology (sexing and aging, body size reconstruction, bone pathology). Lectures will be combined with hands-on experience with bone models and real bone specimens.
Instructor(s): C. Ruff
Area: Natural Sciences.

AS.020.379. Evolution. 3.0 Credits.
This course takes a broad look at the impact of natural selection and other evolutionary forces on evolution. Emphasis is placed on what we can learn from genome sequences about the history of life, as well as current evolutionary pressures. Recommended Course Background: AS.020.306, AS.020.330, or permission required
Instructor(s): C. Norris
Area: Natural Sciences.

Classics
AS.040.111. Ancient Greek Civilization. 3.0 Credits.
The course will introduce students to major aspects of the ancient Greek civilization, with special emphasis placed upon culture, society, archaeology, literature, and philosophy.
Instructor(s): J. Smith
Area: Humanities.

AS.040.137. Freshman Seminar: Archaeology at the Crossroads: The Ancient Eastern Mediterranean through Objects in the JHU Archaeological Museum. 3.0 Credits.
This seminar investigates the Eastern Mediterranean as a space of intense cultural interaction in the Late Bronze Age, exploring how people, ideas, and things not only came into contact but deeply influenced one another through maritime trade, art, politics, etc. In addition to class discussion, we will work hands-on with artifacts from the JHU Archaeological Museum, focusing on material from Cyprus.
Instructor(s): E. Anderson
Area: Humanities
Writing Intensive.

AS.040.140. Gender and Sexuality in Early Greece and the Eastern Mediterranean. 3.0 Credits.
In this course we will explore evidence and interpretations of gender and sexuality in the region of the Aegean and eastern Mediterranean during the third and second millennia BCE. Material investigated will include the “snake goddess” figures from Minoan Crete, anthropomorphic figurines from the Cyclades and Cyprus, wall paintings, etc. In each case we will consider the history of interpretation as well as investigate the objects’ archaeological and sociocultural contexts. Discussion topics will include representational ambiguity, the specific materialities of objects, and their possible roles in activities construing gender. The course will incorporate material from the JHU Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities.
AS.040.150. Island Archeology: Land and Sea in Ancient Crete, Cyprus and the Cyclades. 3.0 Credits.
Islands present highly distinctive contexts for social life. We examine three island worlds of the ancient eastern Mediterranean. These are places where water had a unique and powerful meaning and boat travel was part of daily life, where palaces flourished and contact with other societies implied voyages of great distance. Class combines close study of material and visual culture with consideration of island-specific interpretive paradigms; trips to Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.218. Celebration and Performance in Early Greece. 3.0 Credits.
Surviving imagery suggests that persons in Minoan and Mycenaean societies engaged in various celebratory performances, including processions, feasts, and ecstatic dance. This course explores archaeological evidence of such celebrations, focusing on sociocultural roles, bodily experience, and interpretive challenges.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.221. Art and Archaeology of Early Greece. 3.0 Credits.
This course explores the origins and rise of Greek civilization from the Early Bronze Age to the Persian Wars (ca. 3100-480 B.C.), focusing on major archaeological sites, sanctuaries, material culture, and artistic production.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.348. Worlds of Homer. 3.0 Credits.
Through texts, art, and archaeological remains, this course examines the various worlds of Homer—those recalled in the Iliad and Odyssey, those within which the epics were composed, and those born of the poet’s unique creative work. Class will make museum visits. Ancient texts read in translation.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.366. The Archaeology of Ancient Cyprus: Investigating a Mediterranean Island World in the JHU Museum. 3.0 Credits.
This course explores the visual and material worlds of ancient Cyprus from the earliest human evidence through the Iron Age. Course topics will include the island’s unique position between the Aegean and Near East and how this has impacted both Cyprus’ ancient past and the way in which it has been conceived in the modern world. Class involves regular analysis of artifacts based in the Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.373. Propaganda and the Art of Visual Politics during the Roman Empire. 3.0 Credits.
We will examine visual expressions of propaganda in the city of Rome, considering how emperors used public art to promote their political agendas and their ideological vision of power. Dean’s Teaching Fellowship course
Instructor(s): A. Tabeling
Area: Humanities.

Anthropology

AS.070.132. Invitation to Anthropology. 3.0 Credits.
Click. The screen that brings you last night’s Instagrams and celebrity gossip also flashes glimpses of melting icecaps and burning rubble. These are complex times for human beings, both exciting and unsettling. This course introduces anthropology as a way of reflecting on the challenges of contemporary life around the globe, focusing on themes such as migration, warfare, ecology, inequality, and addiction.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.070.419. Logic of Anthropological Inquiry. 3.0 Credits.
Anthropology is an endeavor to think with the empirical richness of the world at hand, a field science with both literary and philosophical pretensions. This course grapples with the nature of anthropological inquiry, reading classic works in the discipline as well as contemporary efforts to reimagine its foundations. Required for anthropology majors.
Prerequisites: Prereqs: AS.070.273 OR AS.070.317
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

Near Eastern Studies

AS.130.101. Ancient Near Eastern Civilizations. 3.0 Credits.
Review of important issues in ancient Near Eastern history and culture from the Neolithic era to the Persian period. Included will be an examination of the Neolithic agricultural revolution, the emergence of cities, states and writing, and formation of empires. Cultures such as Sumer and Akkad, Egypt, the Hittites, Israelites, Assyrians, Babylonians, and Persians will be discussed.
Instructor(s): G. Schwartz
Area: Humanities.

AS.130.102. From the Neanderthals to the Neolithic. 3.0 Credits.
Emphasizing theories about human biological and cultural development, this course consists of an in-depth survey of Neanderthal morphology and culture, a brief discussion of evolutionary theory and our fossil ancestors, and concludes with an exploration of the mechanisms and results of the shift from hunting and gathering to farming. (Course formerly known as Introduction: Human Prehistory.) Cross-listed with Anthropology.
Instructor(s): S. McCarter
Area: Humanities.

AS.130.109. Freshman Seminar: Ancient Homes and Houses. 3.0 Credits.
What will your bedroom tell future archaeologists? What can ancient houses tell archaeologists of past societies? This course explores methods/theories of Household Archaeology in the Near East and beyond.
Instructor(s): J. Swerida
Area: Humanities.

AS.130.110. Introduction To Archaeology. 3.0 Credits.
An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.
Instructor(s): E. Anderson
Area: Humanities, Social and Behavioral Sciences.
AS.130.122. Freshman Seminar: The Archaeology of Death, Burial, and the Human Skeleton. 3.0 Credits.
This course will introduce students to the archaeological investigation of past human populations through their mortuary and physical human remains. To this end, major theories and methodologies will be introduced, along with pertinent case studies for discussion.
Instructor(s): C. Brinker
Area: Humanities.

AS.130.126. Gods and Monsters in Ancient Egypt. 3.0 Credits.
To provide a basic introduction to Egyptian Religion, with a special focus on the nature of the gods and how humans interact with them. We will devote particular time to the Book of the Dead and to the "magical" aspects of religion designed for protective purposes.
Instructor(s): R. Jasnow
Area: Humanities.

AS.130.135. Pyramids, Temples and Tombs. 3.0 Credits.
Introduction to the monuments and culture of Egypt from 3500 B.C. to 100 A.D. From the pyramids at Giza to Hellenistic Alexandria, this course surveys in slide illustrated lectures the remains of one of the world's greatest early cultures.
Instructor(s): B. Bryan
Area: Humanities
Writing Intensive.

AS.130.177. World Prehistory: An Anthropological Perspective. 3.0 Credits.
How and why did our nomadic hunting and gathering ancestors become farmers? What led agricultural societies to build cities, develop writing, religious institutions, wage war, and trade for exotic goods? This course surveys prehistory and ancient history from the origins of human culture to the emergence civilization. Although prehistory and ancient history yield evidence of tremendous cultural diversity this course emphasizes common elements of past human experience, culture, and culture change. These include the origins of modern humans and their adjustment to a variety of post-ice age environments, shifts from hunting and gathering to agricultural lifeways, and the initial development of the world's earliest cities and civilizations.
Instructor(s): R. Wanner
Area: Humanities, Social and Behavioral Sciences.

AS.130.203. Archaeology of Africa: From Human Origins to the Emergence of Civilizations. 3.0 Credits.
This course examines Africa's ancient past from the emergence of biologically modern humans, ancient hunter-gatherers, the earliest animal herding and farming populations, to cities and civilizations. While Egypt plays an undeniably central role in world history, this course concentrates in particular on ancient geographies other than Egypt.
Instructor(s): M. Harrower
Area: Humanities.

AS.130.213. Introduction to Ancient Egyptian Art. 3.0 Credits.
This class is a combination of illustrated lecture and discussion, punctuated with visits to museums with Egyptian collections. Participants must be able to join at least one overnight trip to New York and/or Boston (weekend) and be available for two half day visits to Philadelphia and Washington, D.C. or elsewhere (TBA as best for participants), in addition to visiting Baltimore institutions with the class as part of the course. Discussion of sculpture will take place in front of the objects, so attendance is important for the visits.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.333. Ancient Egypt and Her Neighbors. 3.0 Credits.
An introduction to ancient Egypt's portrayals of and interactions with foreign lands and peoples, including Syria-Palestine to the east and Nubia to the south. Topics include trade, travel, warfare and diplomacy. Textual, iconographical and archaeological sources will be considered.
Instructor(s): A. Arico
Area: Humanities.

AS.130.334. Egyptian Funerary Arts in the Archaeological Museum. 3.0 Credits.
This class will aim to cover the production and choice of funerary objects for Egyptian elite tombs in several eras of antiquity: the Middle and New Kingdoms, the Third Intermediate Period, and the Late Periods. Students will work with specific objects after learning generally about them, and they will carry out analyses of materials, pigments, construction methods, and erosion and degradation effects. They will create a virtual exhibition for the Museum's website and present their results for inclusion in the museum cataloging project.
Instructor(s): B. Bryan; S. Balachandran
Area: Humanities.

AS.130.351. The Emergence of Civilization: A Cross-Cultural Examination. 3.0 Credits.
A comparative study of the origins of urban, literate civilizations in five culture areas: Mesopotamia, China, the Indus Valley, Egypt, and Mesoamerica. For each area, we will review the physical setting, the archaeological and textual evidence for the development of states and urban civilization, and theories advanced to explain the rise (and eventual collapse) of these complex societies.
Instructor(s): G. Schwartz
Area: Humanities, Social and Behavioral Sciences.

AS.130.353. Space Archaeology: An Introduction to Satellite Remote Sensing, GIS and GPS. 3.0 Credits.
This course introduces technologies archaeologists use to map ancient landscapes. These include Geographic Information Systems (GIS) mapping software, advanced Global Positioning System (GPS) receivers, and various types of satellite imagery. Taught together with AS.131.653.
Instructor(s): M. Harrower
Area: Natural Sciences, Social and Behavioral Sciences.

AS.130.354. Archaeological Method and Theory. 3.0 Credits.
Climate change, population growth, war - what questions do archaeologists ask about the ancient past, how do they collect relevant evidence, and how do they arrive at satisfying answers to their questions? This course will review major theoretical currents in archaeology including evolutionary, cultural-historical, processual and post-processual approaches and discuss the future of archaeology as a scientific and humanistic discipline. Basic techniques for analyzing major categories of artifacts such as lithics, ceramics, archaeobotanical, and zooarchaeological materials will also be introduced.
Instructor(s): M. Harrower
Area: Humanities, Social and Behavioral Sciences.
AS.130.357. Geographic Information Systems in Archaeology. 3.0 Credits.
Applications of GIS in archaeology have recently expanded dramatically and GIS has now become an indispensable tool for archaeological research worldwide. This course will introduce the major applications of Geographic Information Systems (GIS) in archaeology. These include the history of GIS in archaeology, air photography and satellite imagery, predictive modeling, hydrological modeling, viewsheds, and least-cost routes. It will grapple with theoretical issues manifest in archaeological GIS including conflicts between environment and social understandings of the ancient past, and will foster discussion of issues that affect outcomes of analyses including spatial scale and boundary delineation choices that can dramatically influence results. Students will learn the basics of ESRI’s ArcGIS software. Taught with AS.131.657.
Instructor(s): M. Harrower
Area: Humanities, Natural Sciences.

AS.130.368. Nomads, Tyrants and Kings: Water in the Ancient Near East. 3.0 Credits.
This course explores economic and social histories of water in the ancient Near East. It examines water’s diverse roles in ancient Mesopotamian, Egyptian, Levantine and South Arabian agriculture, politics, ritual and religion, including water’s interconnected significance in Judaism, Christianity, and Islam. Taught jointly with AS.131.615.
Instructor(s): M. Harrower
Area: Humanities.

AS.130.376. Ancient Magic and Ritual. 3.0 Credits.
This course will introduce students to the vast body of rituals that were practiced and performed in antiquity, with a particular emphasis on rituals from ancient Mesopotamia, Egypt, and the Hebrew Bible. In addition to examining rituals from a comparative perspective, anthropological and sociological studies of ritual will be read and discussed to shed light on the social, cultural, and political significance of ritual in the ancient world and beyond.
Instructor(s): P. Delnero
Area: Humanities.

AS.130.377. Creating an Egyptian Temple. 3.0 Credits.
This class will challenge every participant to plan a temple environment for a particular deity. The readings, lectures, and discussions will cover the mythology around specific gods and how it influenced temple architecture, location, ritual, and festivals. It will survey the history of temple building in Egypt, the role of architecture and art – particularly wall reliefs – in communicating the functions of particular parts of temples. The aim is to help students understand what requirements an Egyptian temple needed to fulfill. Then each student will plan a temple for a chosen deity and explain to peers how it meets the ancient requirements.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.378. Geoarchaeology: Applications of Earth Science to Archaeology. 3.0 Credits.
Geoarchaeology is a multidisciplinary subfield that applies the tools and techniques of earth science to understand ancient humans and their interactions with environments. This course examines basic topics and concepts, including archaeological site formation, paleoenvironmental reconstruction, raw materials and resources, soil science, deposition and erosion of wind and water-borne sediments in different environments such as along rivers, lakes and coastlines, radiocarbon and other chronometric dating methods, and ground-based remote sensing, including ground penetrating radar.
Instructor(s): M. Harrower
Area: Natural Sciences, Social and Behavioral Sciences.

AS.130.384. Old Kingdom Art. 3.0 Credits.
This course will explore the artistic expression of Egyptian culture from the 3rd through the 6th Dynasties, ca. 2700-2100 B.C. Tombs, temples, statuary, and two-dimensional wall decoration provide a large visual vocabulary of Egyptian concepts. This class will look at these elements, separately and in combination in order to consider the intentions behind the art and evaluate the degree to which religious and ideological symbolism, known from later Egyptian art, should be understood in the early pyramid-building era.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.395. Being_ in Ancient Egypt: Ethnicity, Sexuality, and Gender. 3.0 Credits.
What was it like to live in ancient Egypt? At first this question may seem deceivingly straightforward. But with further thought, its complexity becomes clear. Who are we concerned with? How the king lived? A poor farmer? His wife or children? A foreign immigrant? Moreover, what is our evidence for life in Egypt? Do all of the sources support similar interpretations? This course will begin to tackle these questions by considering the experiences of different people in ancient Egypt.
Instructor(s): T. Prakash
Area: Humanities.

AS.130.420. Seminar in Research Methods in Near Eastern Studies: (Auto)biography in the Ancient Near East. 3.0 Credits.
Just as in our time, the peoples of the ancient Near East were greatly interested in their own pasts. One of the most vibrant manifestations of this interest was the writing of biographies, in which ancient authors told the stories of individual lives. These biographies present an enormous challenge to contemporary historians. On the one hand, they offer a wealth of evidence – sometimes our only evidence – about some of the most famous persons of antiquity. On the other hand, the biographies were seldom written according to what we might consider “proper historical method.” How, as modern historians, do we approach these biographies in studying the ancient past? Using a variety of case studies, students will develop skills in specific research skills such as critical reading, analysis, and interpretation. AS.130.420 is required of NES Majors, but is also open to non-majors who have taken at least one 100-level and one 300-level Near Eastern Civilization course, or with the consent of the instructor.
Instructor(s): J. Lauinger
Area: Humanities
Writing Intensive.

AS.133.615. Representation and Identity in Ancient Egypt.
Using artistic, archaeological, and textual data, this course will apply recent anthropological and archaeological theories for understanding identity to ancient Egypt. In order to successfully approach such a broad concept, which could easily encompass many other topics, we will focus specifically on three different types of identity: ethnic (and cultural), gender, and sexual. Throughout the semester, we will explore how scholars identify past identities and the issues associated with this process. We will also consider the ways in which these identities were fluid, socially or culturally restricted, and self-defined.
Instructor(s): T. Prakash
Area: Humanities.
Earth Planetary Sciences
AS.270.205. Introduction to Geographic Information Systems and Geospatial Analysis. 3.0 Credits.
The course provides a broad introduction to the principles and practice of Geographic Information Systems (GIS) and related tools of Geospatial Analysis. Topics will include history of GIS, GIS data structures, data acquisition and merging, database management, spatial analysis, and GIS applications. In addition, students will get hands-on experience working with GIS software.
Instructor(s): X. Chen
Area: Engineering, Natural Sciences.

Behavioral Biology
AS.290.101. Human Origins. 3.0 Credits.
This course examines the origins of human structure, function and behavior from an evolutionary perspective. It includes study of the evolution, behavior and behavioral ecology of nonhuman primates, hominid evolution (including the paleontological and archaeological records), and the origins of human cognition, social behavior and culture. Cross-listed with History and History of Art.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.205. Examining Archaeological Objects. 3.0 Credits.
This course considers the role of materials in the production, study and interpretation of objects by examining artifacts from the Johns Hopkins Archaeological Museum. Students will consider materials such as ceramics, stone, metal, glass, wood and textiles, and visit artists’ studios to gain an understanding of historical manufacturing processes. M&S practicum course. Cross-listed with Archaeology, Near Eastern Studies, Classics, and History of Art.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.250. Conservation of Material Culture: Art, Artifacts and Heritage Sites. 3.0 Credits.
This course will introduce students to the field of art conservation through the study of paintings, paper, books, objects, contemporary sculpture and historic preservation. Topics covered will include: methods of manufacture, agents of deterioration, preservation initiatives, conservation treatment and ethics, and conservation science. Cross-listed with History of Art. Class usually meets at 1:30 - 3:50 PM, except for days with field trips.
Instructor(s): L. Trusheim
Area: Humanities.

AS.389.315. Ancient Color: The Technologies and Meanings of Color in Antiquity. 3.0 Credits.
What role did the colorful surfaces of sculptures, vessels and textiles play in the ancient world? We examine historical texts and recent scholarly and scientific publications on the technologies and meanings of color in antiquity, and use imaging and analytical techniques to study polychromed objects from the Johns Hopkins Archaeological Museum.
Instructor(s): S. Balachandran
Area: Humanities, Social and Behavioral Sciences.

AS.389.336. Heritage at Work. 3.0 Credits.
Working with the Catoctin Furnace historic site, students will gain hands-on experience connecting archaeology with interpretive exhibits, public outreach, and community engagement. Several field trips to Catoctin required. M&S practicum course.
Instructor(s): E. Comer
Area: Humanities, Social and Behavioral Sciences.

AS.389.340. Critical Issues in Art Conservation. 3.0 Credits.
The course examines recent controversies in the conservation of major global art works and sites, raising questions concerning the basic theoretical assumptions, practical methods and ethical implications of art conservation. Cross-Listed with History of Art and Anthropology.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.349. Art, Museums and the Law. 3.0 Credits.
This course will introduce and examine the legal systems that structure and guide museums’ management of collections and relationships with artists, employees, the public, the state, and the international community.
Instructor(s): W. Levandusky
Area: Humanities.

AS.389.440. Who Owns Culture?. 3.0 Credits.
This seminar explores the complicated, often explosive concept of cultural property, including questions surrounding the ownership, preservation, and interpretation of artifacts, monuments, heritage sites, and living traditions. Cross-listed with Anthropology and History of Art.
Instructor(s): E. Rodini
Area: Humanities, Social and Behavioral Sciences.

Environmental Health and Engineering
EN.570.205. Ecology. 3.0 Credits.
Introduction to processes governing the organization of individual organisms into populations, communities, and ecosystems. Interactions between individual organisms, groups of organisms, and the environment, including adaptation, natural selection, competition.
Instructor(s): G. Brush
Area: Natural Sciences.

EN.570.406. Environmental History. 3.0 Credits.
Environmental history explores the interactions between social change and environmental transformation, or the ways in which societies modify landscapes and are themselves affected by geological, climatological and changing ecological conditions. Topics include the relationship between climate change and human evolution, the environmental impacts of market-based commodity production and regional economic specialization; the relationship between urbanization and environmental change; how warfare affects and is affected by environmental conditions.
Instructor(s): E. Schoenberger
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Behavioral Biology Program
http://krieger.jhu.edu/behavioralbiology

The David S. Olton Behavioral Biology Program seeks to establish a greater understanding of the relations of brain and behavior through an interdisciplinary program of study. Students in the Behavioral Biology Program examine the complex interplay between environment and behavior, and the processes and mechanisms that underlie behavior. One goal of the program is for students to learn how to integrate scientific discoveries from the wide array of scientific fields of inquiry that
contribute to the study of behavioral biology, from molecular biology to sociology.

The interdisciplinary characteristics of the Behavioral Biology Program provide an excellent preparation for post-graduate work. For those interested in the health professions, behavioral biology can be integrated into a premedical curriculum that will provide a broad, humanistic perspective. For those who wish to pursue scientific careers in psychopharmacology, behavioral neuroscience, and physiological psychology, the program provides excellent preparation. Students interested in the fields of organismal or integrative biology should also consider this major.

Many students ask about the similarities and differences between the behavioral biology major and the neuroscience major. Both of these programs are interdepartmental, and a majority of professors teach courses that are listed for both majors. Behavioral Biology majors can explore many aspects of the biology of behavior, including the neural mechanisms of behavior (which obviously overlaps with the neuroscience major), but also biomechanical, evolutionary, ecological, and social aspects of behavior. The behavioral biology major also has fairly liberal course requirements which provide students with an opportunity to explore more choices in their liberal arts education. Students majoring in neuroscience focus directly on the brain and on neural function/mechanisms. Generally speaking, the systems Neuroscience focus area provides an excellent preparation for post-graduate work. For those interested in the health professions, behavioral biology can be integrated into a premedical curriculum that will provide a broad, humanistic perspective. For those who wish to pursue scientific careers in psychopharmacology, behavioral neuroscience, and physiological psychology, the program provides excellent preparation. Students interested in the fields of organismal or integrative biology should also consider this major.

The core program of the behavioral biology major provides background and breadth in

1. The life sciences (e.g., biology and neuroscience)
2. The natural sciences (e.g., chemistry and physics) and mathematics (e.g., calculus and statistics)
3. The social and behavioral sciences (e.g. psychology and anthropology)

The exact courses to be taken are determined by the student in conjunction with the faculty adviser. A grade of C- or better is required for courses fulfilling major requirements and courses may not be taken satisfactory/unsatisfactory. Hopkins undergraduates may enter the Behavioral Biology Program at any time, provided all requirements can be completed before graduation.

Additional information regarding the Behavioral Biology Program is available through our website at http://krieger.jhu.edu/behavioralbiology. You may also contact our Academic Program Administrator, Linda White, linda.m.white@jhu.edu or 410-516-6196.

Requirements for the B.A. Degree
Also see Requirements for a Bachelor’s Degree. (p. 7) Requirements for the behavioral biology major are as follows:

### Math and Science Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td></td>
</tr>
<tr>
<td>AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or AS.030.103 Applied Chemical Equilibrium and Reactivity w/lab</td>
<td></td>
</tr>
<tr>
<td>AS.171.101</td>
<td>General Physics: Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.103</td>
<td>General Physics I for Biological Science Majors</td>
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<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
</tbody>
</table>

### Biology Sequence

Students must have 2 of the following Biology Options. Students can use any combination of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.020.151</td>
<td>General Biology I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; AS.020.153</td>
<td>General Biology Laboratory I</td>
<td></td>
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<td>&amp; AS.020.154</td>
<td>General Biology Lab II</td>
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### Behavioral Biology Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.290.101</td>
<td>Human Origins</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.141</td>
<td>Foundations of Brain, Behavior and Cognition</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.208</td>
<td>Animal Behavior</td>
<td>3</td>
</tr>
<tr>
<td>AS.080.250</td>
<td>Neuroscience Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>AS.290.490</td>
<td>Senior Seminar: Behavioral Biology</td>
<td>1</td>
</tr>
</tbody>
</table>

### Behavioral Biology Elective Courses

Nine credits of advanced bio-behavioral science courses (BEHB-BIOBEH)

Six credits of intermediate/advanced social/developmental/cognitive sciences courses (BEHB-SOCSCI)

### Research or Internship Requirement

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.290.500</td>
<td>Connections in Behavioral Biology</td>
<td>0.5</td>
</tr>
</tbody>
</table>

* For students with AP Biology credit, they may use only one course and its lab from those credits towards this requirement. Therefore, these student must take at least one biology course and its lab at JHU. Students who elect to take General Biology I or II with its lab will lose the corresponding AP credits. Students should also refer to AP credit policies for additional details around the use of AP Biology credits.
** Students should refer to the program website (http://krieger.jhu.edu/behavioralbiology/courses) or the schedule of classes to identify elective choices.

Sample Program
This is only one of many possible course sequences that students may elect to follow; it assumes that students do not have any AP/IB/TR courses to apply toward their degrees.

Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.110.106 Calculus I (Biology and Social Sciences)</td>
<td>4</td>
<td>AS.110.107 Calculus II (For Biological and Social Science)</td>
<td>4</td>
</tr>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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<td>AS.030.102 Introductory Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.105 Introductory Chemistry Laboratory I</td>
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<td>AS.030.106 Introductory Chemistry Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>AS.200.141 Foundations of Brain, Behavior and Cognition</td>
<td>3</td>
<td>AS.290.101 Human Origins</td>
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Sophomore

<table>
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<th>Spring</th>
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<tr>
<td>Biology Option 1</td>
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<td>Biology Option 2</td>
<td>3-4</td>
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<tr>
<td>Biology Lab Option 1</td>
<td>1-3</td>
<td>Biology Lab Option 2</td>
<td>1-3</td>
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<tr>
<td>AS.200.208 Animal Behavior</td>
<td>3</td>
<td>EN.553.112 Statistical Analysis II</td>
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<td>EN.553.111 Statistical Analysis I</td>
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<td>Upper Level Elective (BEHB-SOCSICI)</td>
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<td>11-14</td>
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Junior

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<th>Spring</th>
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<tbody>
<tr>
<td>AS.171.103 General Physics I for Biological Science Majors</td>
<td>4</td>
<td>AS.171.104 General Physics/Biology Majors II</td>
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<tr>
<td>AS.173.111 General Physics Laboratory I</td>
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<td>AS.173.112 General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>Upper Level Elective (BEHB-BIOBEH)</td>
<td>3</td>
<td>Upper Level Elective (BEHB-SOCSICI)</td>
<td>3</td>
</tr>
<tr>
<td>Research or Internship</td>
<td>1-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS.290.500 Connections in Behavioral Biology</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.5-11.5</td>
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Senior

<table>
<thead>
<tr>
<th>Fall</th>
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<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>AS.080.250 Neuroscience Laboratory*</td>
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<td>Upper Level Elective (BEHB-BIOBEH)</td>
<td>3</td>
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<tr>
<td>Upper-Level Elective (BEHB-BIOBEH)</td>
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<tr>
<td>AS.290.490 Senior Seminar: Behavioral Biology**</td>
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<td>3</td>
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</table>

Total Credits: 71.5-79.5

* AS.080.250 Neuroscience Laboratory can be taken anytime after AS.200.141

** AS.290.490 Senior Seminar: Behavioral Biology can be taken either Fall or Spring of senior year.

Honors in the Major
To receive honors in behavioral biology, students must have met the following criteria:
1. Earn a GPA of 3.5 or better in major requirements
2. Conduct research and give a research presentation
3. Receive a recommendation from research mentor

For current faculty and contact information go to http://krieger.jhu.edu/behavioralbiology/faculty_directory/

Faculty
Chair
Christopher Honey, Ph.D
Assistant Professor, Psychological and Brain Sciences

Director of Undergraduate Studies
Linda Gorman, Ph.D
Teaching Professor, Psychological and Brain Sciences

Professor
Peter Holland, Ph.D
Psychological and Brain Sciences

Lecturers
Kirsten Bohn, Ph.D
Psychological and Brain Sciences

Chris Kraft, Ph.D
Johns Hopkins Center for Marital and Sexual Health, Sexual Behaviors Consultation Unit, Johns Hopkins Medical Institutions

Dani Smith, Ph.D
Psychological and Brain Sciences

Susanne Sterbing-D’Angelo, Ph.D
Psychological and Brain Sciences

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.290.101. Human Origins. 3.0 Credits.
This course examines the origins of human structure, function and behavior from an evolutionary perspective. It includes study of the evolution, behavior and behavioral ecology of nonhuman primates, hominin evolution (including the paleontological and archaeological records), and the origins of human cognition, social behavior and culture. Instructor(s): P. Holland
Area: Natural Sciences, Social and Behavioral Sciences.
AS.290.303. Animal Communication. 3.0 Credits.
This course examines animal communication in all modalities (especially sound, sight, and scent) across taxa. Production, perception and evolution of signals will be discussed. Students will learn how to conduct research and write scientific papers in publication form.
Prerequisites: (AS.200.208 OR AS.200.141) AND (AS.171.102 OR AS.171.104)
Instructor(s): K. Bohn
Area: Natural Sciences, Social and Behavioral Sciences.

AS.290.304. Comparative Neuroanatomy. 3.0 Credits.
This course examines the phylogenetic and developmental history of the central nervous system across the vertebrate tree of life, with emphasis on the deep history of those features that characterize the human brain. We will study how our understanding of non-human vertebrates (both model and non-model organisms) can provide important insights into the structure and function of the modern human brain.
Prerequisites: (AS.080.305 AND AS.080.306) OR AS.200.141
Instructor(s): A. Balanoff
Area: Natural Sciences.

AS.290.420. Human Sexual Orientation. 3.0 Credits.
This course will examine the historical and current theories of sexual orientation and sexual variation development by examining the biological, psychological and social contributing factors that influence the development of sexual orientations and variations along with treatment and modification of problematic sexual behaviors. Please note that the use of electronic devices is not permitted during this class, in order to promote the full interactive potential of this engaging seminar-style offering. Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester. Enrollment is limited to Senior Majors & Minors in Behavioral Biology, Biology, Cognitive Science, Medicine, Science & the Humanities; Molecular & Cellular Bio; Neuroscience; Psychology; Public Health; Sociology; Study of Women, Gender, & Sexuality.
Corequisites: Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester.
Instructor(s): C. Kraft
Area: Social and Behavioral Sciences.

AS.290.490. Senior Seminar: Behavioral Biology. 1.0 Credit.
Great ideas in Behavioral Biology. Discussion of classic and cutting edge articles in the original literature. Student presentations and reaction papers. Capstone course for senior Behavioral Biology majors.
Prerequisites: (AS.290.101 AND AS.290.208 AND AS.290.141) or Instructor permission.
Instructor(s): C. Moss; P. Holland
Area: Social and Behavioral Sciences.

AS.290.500. Connections in Behavioral Biology. 0.5 Credit.
A small group of students will meet two times in the semester to share experiences and information on research, internship and volunteer activities in Behavioral Biology. This course is designed to 1) help Behavioral Biology majors obtain real world experiences that can lead to opportunities after graduation, 2) provide an informal setting to develop oral and written communication skills, and 3) build community among students in the major. Students will make oral presentations to the group about activities they wish to pursue or have already completed. Students will also write a short paper/news piece or prepare a webpage on an internship, research or volunteer experience.
Instructor(s): Staff.

AS.290.501. Research-Freshmen. 3.0 Credits.
Instructor(s): Staff.

AS.290.502. Research-Freshmen. 1.0 - 3.0 Credits.
Instructor(s): Staff.

AS.290.503. Research-Sophomores. 3.0 Credits.
Instructor(s): Staff.

AS.290.504. Research-Sophomores. 1.0 - 3.0 Credits.
Instructor(s): Staff.

AS.290.505. Research-Juniors. 3.0 Credits.
Instructor(s): Staff.

AS.290.506. Research-Juniors. 1.0 - 3.0 Credits.
Instructor(s): Staff.

AS.290.507. Research-Seniors. 3.0 Credits.
Instructor(s): Staff.

AS.290.508. Research-Seniors. 1.0 - 3.0 Credits.
Instructor(s): Staff.

AS.290.519. Independent Study. 3.0 Credits.
Instructor(s): L. Gorman.

AS.290.520. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): C. Moss; K. Bohn; L. Gorman.

AS.290.590. Behavioral Biology Internship. 1.0 - 3.0 Credits.
Instructor(s): L. Gorman.

AS.290.594. Behavioral Biology Internship. 1.0 Credit.
Instructor(s): C. Moss; L. Gorman.

AS.290.596. Behavioral Biology Internship. 1.0 - 3.0 Credits.
Instructor(s): L. Gorman.

AS.290.597. Research - Summer. 3.0 Credits.
Instructor(s): C. Moss; E. Fortune; F. Madison; K. Bohn; L. Gorman.

Cross Listed Courses
Biology
AS.020.151. General Biology I. 3.0 Credits.
This course is an introduction to biology from an evolutionary, molecular and cellular perspective. Specific topics and themes include evolutionary theory, the structure and function of biological molecules, mechanisms of harvesting energy, cell division, classical genetics and gene expression. This section will involve in-class problem solving and the use of assigned pre-class videos and questions.
Instructor(s): C. Roberson; R. Pearlman; R. Shingles
Area: Natural Sciences.

AS.020.152. General Biology II. 3.0 Credits.
This course builds on the concepts presented and discussed in General Biology I. The primary foci of this course will be on the diversity of life and on the anatomy, physiology, and evolution of plants and animals. There will be a special emphasis on human biology.
Prerequisites: Prereq: AS.020.151
Instructor(s): C. Roberson; R. Pearlman; R. Shingles
Area: Natural Sciences.
AS.020.153. General Biology Laboratory I. 1.0 Credit.
This course reinforces the topics covered in AS.020.151. Students participate in a semester-long project, identifying bacteria from Homewood campus soils using molecular biology techniques. Other laboratory exercises cover aspects of evolution, genomics and biochemistry. Cross-listed with Behavioral Biology. Student must have enrolled in AS.020.151 either this term or in past terms. Students who have credit for AP Biology but take General Biology Lab I will lose four credits of AP Biology credit. Cross-listed with Behavioral Biology. Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.; AS.020.151
Instructor(s): R. Pearlman
Area: Natural Sciences.

Anthropology
AS.070.352. Evolution, Ecology, Becoming. 3.0 Credits.
The concept of evolution is central to social theory. Originating in the question of the species, it has moved into questions of human ecology, cultural forms and modes of thought. While it remains a deeply contested, often criticized concept, particularly in its neo-Darwinian manifestation, it orient anthropological thinking in ways that are as yet to be examined. Reaching into the archives of anthropology and other cognate disciplines, this course will examine the writings of Lyell, Darwin, Marx, Morgan, Boas, Steward, Bateson, Ingold among others. Co-listed with AS.070.610
Instructor(s): A. Goodfellow; N. Khan
Area: Humanities, Social and Behavioral Sciences.

Neuroscience
AS.080.330. Brain Injury & Recovery. 3.0 Credits.
This course investigates numerous types of brain injuries and explores the responses of the nervous system to these injuries. The course’s primary focus is the cellular and molecular mechanisms of brain injury and the recovery of function. Discussions of traumatic brain injury, stroke, spinal cord, and tumors, using historical and recent journal articles, will facilitate students’ understanding of the current state of the brain injury field. Cross-listed with Psychological and Brain Sciences and Behavioral Biology.
Prerequisites: (AS.080.305 AND AS.080.306) OR (AS.020.312 OR AS.020.306) OR (200.141 and 020.306) OR Permission of Instructor
Instructor(s): L. Gorman
Area: Natural Sciences
Writing Intensive.

AS.080.348. Science of Learning. 3.0 Credits.
Can we know what we know about the brain guide how we learn or teach in our schools? This seminar course is designed to address this question. In this course we will focus on the science of what we know about learning and teaching (and not the politics) to see if we can actually use the research to “optimize learning in society”. As we read the literature, we will look at some of the “neuromyths” that have been propagated thus far and discuss how to avoid creating new neuromyths by effectively communicating the research.
Prerequisites: Pre-reqs: AS.080.306 OR AS.200.141
Instructor(s): L. Gorman
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

Psychological Brain Sciences
AS.200.141. Foundations of Brain, Behavior and Cognition. 3.0 Credits.
A survey of neuropsychology relating the organization of behavior to the integrative action of the nervous system. Cross-listed with Behavioral Biology and Neuroscience.
Instructor(s): L. Gorman
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.208. Animal Behavior. 3.0 Credits.
Examines basic principles of animal behavior (orientation, migration, communication, reproduction, parent-offspring relations, ontogeny of behavior and social organization). Evolution and adaptive significance of behavior will be emphasized.
Prerequisites: AS.200.141 OR AS.200.152 OR Permission of Instructor.
Instructor(s): K. Bohn
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.344. Behavioral Endocrinology. 3.0 Credits.
An examination of the effects of hormones on behavior in non-human and human animals. Topics will include the effects of hormones on sexual differentiation, reproductive behavior, parental behavior, homeostasis and biological rhythms, regulation of body weight, learning and memory. Cross-listed with Behavioral Biology and Neuroscience.
Prerequisites: Prereqs: (AS.200.141 OR AS.080.306) OR (AS.020.151 AND AS.020.152) OR (AS.020.305 AND AS.020.306) or instructor’s permission
Instructor(s): K. Bohn
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.376. Psychopharmacology. 3.0 Credits.
Designed to provide information about how drugs affect the brain and behavior. The course focuses on biological concepts underlying structures and functions of the brain that relate to mental disorders. An introduction to neurobiology and brain function is presented as it applies to the interaction of various classes of drugs with the individual neurotransmitter systems in the brain. A brief historic review is followed by a discussion of clinical relevance. Cross-listed with Behavioral Biology and Neuroscience. Enrollment limited to juniors and seniors.
Prerequisites: AS.200.141 OR AS.020.306 OR AS.080.305 or Instructor Permission
Instructor(s): H. Adwanikar; S. Sterbing-d’angelo
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.386. Animal Cognition. 3.0 Credits.
Examine relations between brain, mind, and behavior in nonhuman animals, focusing on topics such as learning, memory, attention, decision-making, navigation, communication, and awareness. We will take a variety of approaches, including behavioral, computational, evolutionary, neurobiological, and psychological perspectives.
Prerequisites: AS.200.141 OR AS.200.208 OR AS.290.101 or Instructor permission.
Instructor(s): P. Holland
Area: Social and Behavioral Sciences.

Bioethics Program
http://www.bioethicsinstitute.org/
The practice of medicine, the development of public health policies, and advances in the biomedical sciences raise fundamental moral and philosophical issues. The bioethics program is designed to provide students with an understanding of these issues, and the background and the conceptual tools to think about them clearly. The program is a
collaboration between the Johns Hopkins Berman Institute of Bioethics and the Department of Philosophy, and draws on the resources of both.

Requirements for the Minor

Eight Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>AS.150.219</td>
<td>Introduction to Bioethics</td>
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<tr>
<td>AS.150.220</td>
<td>Introduction to Moral Philosophy</td>
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Select one of the following:

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<td>AS.020.151</td>
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<tr>
<td>&amp; AS.020.152</td>
<td>and General Biology II</td>
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<tr>
<td>AS.020.305</td>
<td>Biochemistry</td>
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<tr>
<td>&amp; AS.020.306</td>
<td>and Cell Biology</td>
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</tr>
<tr>
<td>EN.580.421</td>
<td>Systems Bioengineering I</td>
<td>3</td>
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<td>&amp; EN.580.422</td>
<td>and Systems Bioengineering II</td>
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</table>

At least two upper-level (300- or 400-level) seminars offered by the bioethics program (AS.150.3xx+ with POS-Tag PHIL-BIOETH) 6

Two additional bioethics seminars not counted in fulfillment of the previous requirement approved by the program’s advisory committee. 6

Total Credits 26

* Pre-approved courses fulfilling this requirement will have the POS-Tag PHIL-BIOETH in their course description.

All courses must be taken for letter grades and receive a grade of C- or higher.

For more information, please contact Professor Hilary Bok.

For current faculty and contact information go to https://bioethics.jhu.edu/people/

Faculty

Director

Hilary Bok
Associate Professor (Director), Philosophy.

Associate Professor

Maria Merritt
(Bloomberg School of Public Health): bioethics.

Research Scientist

Andrew Siegel
(Berman Institute of Bioethics).

Biology

http://www.bio.jhu.edu

The Department of Biology offers a broad program of undergraduate, graduate, and postgraduate study in the biological sciences. Included among the areas in which instruction and research opportunities are available are biochemistry and biophysics, cell biology, molecular biology, microbiology, developmental biology, genetics, neuroscience, and immunology.

Undergraduate Programs

The Biology Department offers two degree options for undergraduate students, a Bachelor of Arts degree for biology majors and a Bachelor of Science degree for molecular and cellular biology majors.

Requirements for the B.A. Degree

(Also see Requirements for a Bachelor’s Degree. (p. 7))

The B.A. degree in biology is designed to provide students with a thorough grounding in modern biology, with special emphasis on the molecular aspects of the discipline.

All courses required for the biology major must be taken for a letter grade (not S/U) and be passed with a grade of C- or better with one exception. The department will accept one passing grade below C- in the senior year provided that the average for all formal lecture and laboratory courses is at least 2.0. http://bio.jhu.edu/undergraduate/ba-requirements/

Mathematics

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<th>Course Title</th>
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<td>Calculus I (Biology and Social Sciences)</td>
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<td>or AS.110.108</td>
<td>Calculus I</td>
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</tr>
<tr>
<td>AS.110.107</td>
<td>Calculus II (For Biological and Social Science)</td>
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<tr>
<td>or AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
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<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
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Physics

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<td>General Physics I for Biological Science Majors</td>
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<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
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<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
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<td>General Physics for Physical Science Majors (AL)</td>
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<td>General Physics Laboratory II</td>
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Chemistry

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<td>and Introductory Chemistry Laboratory II</td>
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<tr>
<td>or AS.030.103</td>
<td>Applied Chemical Equilibrium and Reactivity w/lab</td>
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<td>AS.030.205</td>
<td>Introductory Organic Chemistry I</td>
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<td>AS.030.206</td>
<td>Organic Chemistry II</td>
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<td>or AS.030.212</td>
<td>Honors Organic Chemistry II with Applications in Biological and Materials Chemistry</td>
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<td>AS.030.225</td>
<td>Introductory Organic Chemistry Laboratory</td>
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<tr>
<td>or AS.030.227</td>
<td>Chemical Chirality: An Introduction in Organic Chem. Lab, Techniques</td>
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Biology

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<td>General Biology II</td>
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<td>AS.020.305</td>
<td>Biochemistry</td>
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</tr>
<tr>
<td>AS.020.315</td>
<td>Biochemistry Project lab</td>
<td>2-3</td>
</tr>
<tr>
<td>or AS.250.253</td>
<td>Protein Engineering and Biochemistry Lab</td>
<td></td>
</tr>
<tr>
<td>or AS.250.254</td>
<td>Protein Biochemistry and Engineering Laboratory</td>
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</tr>
<tr>
<td>AS.020.306</td>
<td>Cell Biology</td>
<td>4</td>
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<td>AS.020.316</td>
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<td>Genetics</td>
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<td>Developmental Genetics Lab</td>
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<tr>
<td>AS.020.363</td>
<td>Developmental Biology</td>
<td>3</td>
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Electives
At least three courses totaling at least eight credits (see POS-Tag BIOL-UL in the Schedule of Classes) from the courses approved by the Director of Undergraduate Studies. At least one must be a 3 credit course taught in the Biology Department (AS.020.xxx)

Total Credits 70-71

### Sample Program of Study

#### Freshman

<table>
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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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<td>AS.110.106 Calculus I (Biology and Social Sciences)</td>
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<td>AS.110.107 Calculus II (For Biological and Social Science)</td>
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<td>AS.020.151 General Biology I</td>
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#### Sophomore

<table>
<thead>
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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.020.303 Genetics</td>
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<tr>
<td>AS.020.340 Developmental Genetics Lab</td>
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<td>AS.020.316 Cell Biology Lab</td>
<td>1</td>
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<tr>
<td>AS.030.205 Introductory Organic Chemistry I</td>
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<td>AS.030.206 Organic Chemistry II</td>
<td>4</td>
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<tr>
<td>AS.030.225 or 227 Introductory Organic Chemistry Laboratory</td>
<td>3</td>
<td>AS.030.225 or 227 Introductory Organic Chemistry Laboratory (if not taken previously)</td>
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#### Junior

<table>
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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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</tr>
</thead>
<tbody>
<tr>
<td>AS.020.305 Biochemistry</td>
<td>4</td>
<td>AS.020.363 Developmental Biology</td>
<td>3</td>
</tr>
<tr>
<td>AS.020.315 Biochemistry Project lab (or 250.253)</td>
<td>1</td>
<td>AS.171.104 or 102 General Physics/Biology Majors II</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.103 or 101 General Physics I for Biological Science Majors</td>
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<td>AS.173.112 General Physics Laboratory II</td>
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<td>AS.173.111 General Physics Laboratory I</td>
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10 10-11

#### Senior

<table>
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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Upper Level Biology Elective</td>
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<td>Upper Level Biology Elective</td>
<td>2-3</td>
</tr>
</tbody>
</table>

2-3 2-3

Total Credits: 72-75

### B.S. Degree in Molecular and Cellular Biology

The Biology Department offers a B.S. degree in molecular and cellular biology. The B.S. program is designed to provide a rigorous preparation for advanced study in the biomedical sciences. The program is tailored not only to students planning to enter Ph.D. programs or obtain employment in the biotechnology industry but also for premedical students.

All courses required for the molecular and cellular biology major must be taken for a letter grade (not S/U) and be passed with a grade of C- or better with one exception. The department will accept one passing grade below C- in senior year provided that the average for all formal lecture and laboratory courses is at least 2.0. [http://bio.jhu.edu/undergraduate/bs-requirements/](http://bio.jhu.edu/undergraduate/bs-requirements/)

### Requirements

Same as BA except:

- 6 credits of research required
- 2 additional electives (2 total electives must be AS.020.xxx courses)
- General Biology is not required

The B.S. degree in molecular and cellular biology requires, in addition to the requirements for the B.A. degree in biology, at least two additional upper level elective courses totaling five additional credits or more (for a total of at least 13 credits) from the elective list, and two of those electives must be at least 3 credit hours and have an 020 number. The B.S. degree also requires six credits of research supervised or sponsored by a faculty member in Biology. The supervised research will include participation in group meetings and writing a summary of accomplished work at the end of the year. General Biology I and II are not required for the B.S. degree.

### Sample Program of Study

#### Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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<td>AS.030.102 Introductory Chemistry II</td>
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<td>AS.030.105 Introductory Chemistry Laboratory I</td>
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<td>AS.030.106 Introductory Chemistry Laboratory II</td>
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<tr>
<td>AS.110.106 Calculus I (Biology and Social Sciences)</td>
<td>4</td>
<td>AS.110.107 Calculus II (For Biological and Social Science)</td>
<td>4</td>
</tr>
<tr>
<td>AS.020.151 General Biology I</td>
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<td>AS.020.152 General Biology II</td>
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<td>AS.020.153 General Biology Laboratory I</td>
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#### Sophomore

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</tr>
<tr>
<td>AS.030.205 Introductory Organic Chemistry I</td>
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<td>AS.030.206 Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>AS.030.225 or 227 Introductory Organic Chemistry Laboratory</td>
<td>3</td>
<td>AS.030.225 or 227 Introductory Organic Chemistry Laboratory (if not taken previously)</td>
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#### Junior

<table>
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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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</tr>
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<tr>
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<td>AS.020.363 Developmental Biology</td>
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<td>AS.020.315 Biochemistry Project lab (or 250.253)</td>
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#### Senior

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<th>Fall</th>
<th>Credits</th>
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<tr>
<td>Upper Level Biology Elective</td>
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2-3 2-3

Total Credits: 72-75

The Biology Department offers a B.S. degree in molecular and cellular biology. The B.S. program is designed to provide a rigorous preparation for advanced study in the biomedical sciences. The program is tailored not only to students planning to enter Ph.D. programs or obtain employment in the biotechnology industry but also for premedical students.

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### Requirements

Same as BA except:

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### Sample Program of Study

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#### Senior

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2-3 2-3

Total Credits: 72-75
Graduate Programs

Requirements for the M.S. Degree in Molecular and Cellular Biology

The Biology Department offers a combined B.A./M.S. or B.S./M.S. degree in Molecular and Cellular Biology. The combined degree is open only to Johns Hopkins University undergraduates majoring in Biology or Molecular and Cellular Biology.

Students must complete all requirements for the B.A. or B.S. degree and the following requirements.

Four additional advanced or specialized courses, at least two of which are at the 600-level or above.

<table>
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<td>AS.020.402</td>
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<td>AS.020.551</td>
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<td>AS.020.553</td>
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Final report and presentation

Teaching

Students admitted to the combined program will be awarded the M.S. degree if they complete the requirements listed above, receive a grade of B or better in all courses during the duration of the program, and achieve passing performance on the final written report and oral presentation of the research project completed during the research year as judged by the Thesis Committee.

Admission

Admission to the Molecular and Cellular Biology M.S. program is selective. Hopkins Biology majors and Molecular and Cellular Biology majors who have achieved a minimum overall grade point average of 3.2, and a minimum natural science grade-point average of 3.0, and have had at least two semesters of previous research experience may apply for admission during their junior or senior year. Students with a GPA below the minimum requirement will be considered under special circumstances. Admission decisions are made by the Molecular and Cellular Biology M.S. Program Committee, on the basis of:

1. academic record,
2. a written proposal for a project to be completed in the Mentored Research Program,
3. letters of support and recommendation,
4. an interview if required.
Requirements for the Ph.D. Degree in Cellular, Molecular, Developmental Biology and Biophysics (CMDB Program)

A program of study leading to the Ph.D. degree is open to students who are candidates for, or who already have, the bachelor’s or master’s degree in the biological or physical sciences. To be admitted, the applicant should have had either a thorough training in the fundamentals of biology and both organic chemistry and general physics, or a broad training in the physical sciences and mathematics. Special attention is given to the applicant’s quality of scholarship and his or her promise as an investigator.

In addition to the general university requirements for an advanced degree (see Academic Information for Graduate Students (p. 45)), doctoral candidates must meet the following departmental requirements:

• Four core courses and four 600- and 700-level electives.
• At least one year of laboratory teaching during the period of graduate residence.
• A high level of achievement in a comprehensive written proposal and oral examination covering proficiency in the field of the student’s research interest and various areas of biology and related fields.
• A dissertation based on a program of independent research, a public seminar followed by an oral examination by the thesis committee.

All graduate students are required to complete the four core courses during the first year. In addition, students are required to complete four elective courses before graduation chosen from the list below of 600-level electives and 700-level seminars offered each semester. At least two out of the four courses must be 600-level.

Core Courses, Fall Semester
AS.020.601 Current Research in Bioscience
AS.020.607 Quantitative Biology Bootcamp
AS.020.686 Advanced Cell Biology
AS.020.668 Advanced Genetics and Molecular Biology
AS.020.699 CMDB Responsible Conduct in Research

Core Courses, Spring Semester
AS.020.674 Graduate Biophysical Chemistry
AS.020.637 Genomes & Development
AS.020.617 Quantitative Biology Lab 1
AS.020.618 Quantitative Biology Lab II

Teaching Opportunities
Since most biology Ph.D.’s will teach at some time during their careers, experience in teaching is considered an essential part of the Ph.D. program. The minimum teaching requirement is three contact hours a week for one year in the laboratory sections of undergraduate courses. Further teaching experience is gained through the preparation and presentation of reports in seminars and journal clubs. The department stresses organization of material and clarity of presentation.

Facilities
The lecture rooms, teaching laboratories, and research facilities of the Biology Research Complex (consisting of Seeley G. Mudd Hall and Undergraduate Teaching Laboratories) offer a thoroughly modern research facility for molecular biology.

Financial Aid
The department has fellowship funds for the support of graduate students. Awards are granted for tuition and living expenses. Laboratory fees and research expenses are paid by the department.

Carnegie Institution for Science, Department of Embryology
The Carnegie Institution’s Department of Embryology is located on the Homewood campus, close to the Biology research complex. Members of this group hold part-time appointments in the Department of Biology and participate in the training of graduate students. With the approval of both the department and the Carnegie staff, a number of graduate students in biology conduct thesis research in the Carnegie laboratory. The interests of the Carnegie staff include developmental and molecular biology.

For current faculty and contact information go to http://www.bio.jhu.edu/Directory/TenuredPlusTenureTrack.aspx

Faculty
Chair
Vincent J. Hilser
Professor: thermodynamics, protein structure and dynamics, molecular recognition, protein folding.

Professors
Karen Beemon
retroviral RNA processing and transport; avian leukosis virus tumorigenesis.

Kyle W. Cunningham
calcium transport and signaling mechanisms in yeast.

Ernesto Freire

Edward M. Hedgecock
developmental genetics of the nervous system of Caenorhabditis elegans.

M. Andrew Hoyt
genetics of chromosome segregation and signal transduction in yeast.

Evangelos N. Moudrianakis
assembly and dynamics of nucleoproteins and chromosomes, bacterial, and chloroplast bioenergetics.

Joel F. Schildbach
Vice Dean for Undergraduate Studies: structural biology of bacterial conjugation.

Robert Schleif
protein-DNA interactions and regulation of gene activity.

Trina Schroer
microtubule-based motors, organelle transport.

James Taylor
genomics of gene regulation, chromatin structure and organization, computational genomics and bioinformatics.

Mark Van Doren
gonad development and the formation of sexual dimorphism in the soma and germline.

Beverly R. Wendland
James B. Knapp Dean, Arts and Sciences: molecular mechanisms of endocytosis in yeast

Haiqing Zhao
cellular and molecular mechanisms underlying the development and function of olfactory sensory neurons.

**Associate Professors**

Xin Chen
understanding how genes are expressed in an ordered way to regulate germ cell differentiation; epigenetic mechanisms that participate in regulation.

John Kim
Deputy Director of Graduate Studies; deciphering the epigenetic mechanisms of small RNA-mediated gene regulation and their collaboration with RNA binding proteins.

Rejji Kuruvilla
William Gill Associate Professor; Director of Graduate Studies: local retrograde signaling by target-derived neurotrophins in neuronal development.

**Assistant Professors**

Andrew Gordus
understanding how novel and innate behaviors are encoded at the cellular and genetic level

Robert Johnston
stochastic and long-range gene regulatory mechanisms that diversify neuronal subtypes.

Christian Kaiser
single-molecule biochemistry studies of the machines and processes in protein translation, translocation, and folding.

Yumi Kim
molecular mechanisms of chromosome segregation during meiosis

Rajiv McCoy
computational genomics; human evolution and functional genetic variation

**Professors Emeriti**

Maurice J. Bessman
biochemistry and enzymology, synthesis of nucleic acid derivatives, biochemical basis of spontaneous mutations.

Ludwig Brand
fluorescence studies of protein and membrane dynamics.

Michael Edidin
immunology, membrane organization and dynamics, immunology.

Douglas Fambrough
membrane proteins, targeting, structure, function, and regulation, Na, K-ATPase, Ca-ATPase.

Richard E. McCarty

Allen Shearn
developmental genetics, imaginal disk development in Drosophila studied in lethal and temperature-sensitive mutants.

**Research Professor**

Ru Chih Huang
William D. McElroy Research Professor: gene regulation and chromosomal structure and function, principles of cancer biology and control of cancer and viral growth.

Yuan Chuan Lee
glycoproteins, glycolipids, carbohydrate receptors, and cell-surface substances.

Young-Sam Lee
Assistant Research Professor

J. Michael McCaffery
Integrated Imaging Center Director

Peter Privalov
physics of protein structure.

**Academy Professor**

Ludwig Brand
fluorescence studies of protein and membrane dynamics.

Yuan Chuan Lee
glycoproteins, glycolipids, carbohydrate receptors, and cell-surface substances.

**Lecturers**

Anna Coppola
Eric Johnson
Richard Shingles

**Associate Research Professor**

Jocelyn DiRuggiero
genomic diversity, DNA repair mechanisms and environmental stress responses in extremophiles.

**Senior Lecturer**

Robert Horner
Carolyn Norris
Kathryn Tifft Oshinnaiye
Rebecca Pearlman
Christov Roberson

**Bloomberg Distinguished Professors**

Rachel Green
Professor (Biochemistry)

Carol Greider
Professor (Cell Biology)

Taekjip Ha
Professor (Biophysics)
Ulrich Mueller
Professor (Neuroscience)
Michael Schatz
Associate Professor (Computer Science)
Carl Wu
Professor (Biology)
Adjunct
Alex Bortvin
Assistant Professor: genetic and epigenetic controls of germ cell development and function in vertebrates.
Donald D. Brown
Professor Emeritus: gene expression in development.
Orna Cohen-Fix
Adjunct Professor (NIH); nuclear structure and its effect on nuclear function.
Victor G. Corces
Professor (Emory): control of gene expression, molecular mechanisms of mutagenesis by transposable elements.
Chen-Ming Fan
Professor: molecular and cellular interactions that contribute to vertebrate embryogenesis.
Steven Farber
Associate Professor: real-time imaging of lipid metabolism in live zebrafish; identification of genes which regulate cholesterol absorption using biochemical and genetic strategies.
Joseph G. Gall
Professor: chromosome structure and functions, nucleic acids in development.
Marnie Halpern
Professor: zebrafish development.
Samer Hattar
Associate Professor: circadian rhythms
Audrey Huang
Lecturer.
Michael Lichten
Adjunct Professor (NIH): genetic recombination and chromosome structural changes that occur during meiosis and DNA damage repair, using budding yeast as a model system.
George Scangos
Professor.
Allan Spradling
Professor: molecular genetics of Drosophila.
Yixian Zheng
Professor and Interim Director of Carnegie Institution for Science: cell division, cell morphogenesis, and cell fate specification.

Associate Teaching Professor
Emily Fisher

Director of Undergraduate Studies

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.020.104. Freshman Seminar: From Genes to DNA and Back. 1.5 Credits.
A course consisting of introductory lectures followed by student presentations in the form of seminars. The issues we usually analyze are: How did we arrive at the concept of the “gene”? What are the early observations that gave substance to this concept? How did we arrive at the “one gene, one enzyme” dogma? What is the chemical nature of the gene? Is DNA enough for regulated gene expression? Is it “all in our genes”? What is genetic plasticity and epigenetics? What about genomics and proteomics? In the course of our analyses we bring together observations, and experimental results and ideas not only from biological sciences (Genetics, Cell and Developmental Biology and Genetics) but also from Physics, Sociology, Politics and Philosophy. We do all this in order to clarify how observations turn to ideas, then dogmas and even biases that distort the true meaning of objective Sciences.
Instructor(s): E. Moudrianakis
Area: Natural Sciences.

AS.020.106. Freshman Seminar: Tuberculosis. 1.0 Credit.
Mycobacterium tuberculosis is an extremely successful intracellular bacterial pathogen able to manipulate phagocytic cells and its own metabolism to survive within a host. The molecular mechanisms of this survival and resistance to antibiotics will be studied. Freshmen only.
Instructor(s): R. Horner
Area: Natural Sciences.

AS.020.111. Freshman Seminar: The 'Nobels' in Medicine and Chemistry. 2.0 Credits.
Key events in our understanding of the life sciences will be traced with the aid of Nobel awards.
Instructor(s): L. Brand
Area: Natural Sciences.

AS.020.115. Bioenergetics. 2.0 Credits.
This course is a combination of lectures, student presentations and group discussions that address fundamental principles and also contemporary issues examining the way all forms of Life on Earth are ultimately dependent on sunlight to satisfy their food and energy requirements. We examine the steps from the capture of Physical energy (photons), to the development of electrochemical potentials and finally, to their utilization by cellular organelles towards the synthesis of the chemical "currency" that fuels all biological processes (biosynthesis, cell communication, movements, etc.). Special emphasis will be on current developments in biotechnologies that utilize microbial populations to supply us with fuels and also to clean up environmental hazards. The course will also consider ways to extract lessons from Nature's successful designs and harmonious adaptations so that we, in the long run, can utilize them towards a minimization of our negative impact on the environment. Note: Freshmen and Sophomores only, with good foundations in any two of the following: Physics, Chemistry, Biology, Biophysics.
Instructor(s): E. Moudrianakis
Area: Natural Sciences.
**AS.020.120. Introduction to Laboratory Research. 1.0 Credit.**
This course will introduce students to a variety of biochemical and molecular biological laboratory techniques. These will include DNA analysis by restriction enzyme mapping, amplification of DNA segments by PCR, lipid analysis by chromatography. Additionally, students will visit a variety of biological laboratories to observe actual research projects.*
Prerequisites: High school biology and chemistry.
Instructor(s): Staff
Area: Natural Sciences.

**AS.020.126. Techniques in Molecular Biology. 1.0 Credit.**
This course is designed to supplement the scientific classroom experience of students by providing hands-on experience with the essential core molecular biology techniques of bacterial DNA cloning, DNA analysis, and protein analysis. Students will be able to understand and explain how these methodologies work scientifically and will develop the basic laboratory skills necessary for the successful completion of the assays.
Instructor(s): J. Gordy.

**AS.020.127. Concepts in Cancer Research I: Pre-Diagnosis. 1.0 Credit.**
This course will introduce current topics in cancer research with a focus on the current state of knowledge regarding pre-diagnosis concepts in cancer research. We will first provide students with the context in which to interpret the latest findings in cancer research by giving a brief overview of cancer biology and descriptive epidemiology of the most common cancers in the United States. We will then discuss the current state of knowledge regarding cancer etiology and primary prevention strategies, providing specific examples from research currently being conducted at the National Cancer Institute along with other emerging research in the field of cancer prevention. Finally, we will introduce students to concepts and research in cancer screening. We will employ multiple formats to promote student learning and to introduce different tools for research. These may include lectures, case studies, in-class discussions, online discussions, and select film and Internet resources.
Instructor(s): M. Patel; S. Nash.

**AS.020.128. Concepts in Cancer Research II: Diagnosis through Recovery. 1.0 Credit.**
This course will introduce current topics in cancer research with a focus on "life after cancer," including research questions about medical and psychosocial issues at diagnosis, during treatment and throughout recovery for patients that have been diagnosed with cancer. Health recommendations for cancer survivors will be discussed. Throughout the course, we will hear from researchers at the National Cancer Institute (and other research entities) who represent a variety of disciplines, applied in many settings (e.g., laboratory, clinics and communities). We will also use multi-media to promote active learning and to introduce tools for research. These may include lectures, case studies, in-class discussion, online discussion, and select film (including clips from the recent PBS documentary "Cancer: The Emperor of All Maladies") and internet resources. Active participation and peer learning will enhance the value of this course for students.
Instructor(s): S. Bluethmann.

**AS.020.129. Discover Hopkins: Introduction to Biology & Medicine. 1.0 Credit.**
Introduction to Biology & Medicine: from Textbook to Application. Biology is the study of life dynamics, and medicine is the application of biology to enhance human health. With a particular emphasis on imaging approaches from the scale of the cell to that of the whole body, this course explores how biology research is designed to improve our knowledge and health. The goal is to show students the possible ways of using information learned in textbooks as a starting point to explore new application frontiers and careers in academic research, industrial/biotech development, and medicine. Course is highly interactive and includes lectures, readings, field trips, and guest lectures by professors involved in the scientific advancements. Grades determined by class participation, attendance, quizzes, and oral presentation.
Instructor(s): D. Georgess; N. Neumann.

**AS.020.131. Bacterial Evolution Project Lab. 2.0 Credits.**
In this project-based laboratory course, students will conduct research into mechanisms of bacterial adaptation to conjugative plasmids. In the wet-lab portion of the course, students will learn standard laboratory techniques for bacterial culture and DNA extraction and will carry out experiments to assess phenotypic differences between different laboratory-evolved bacterial populations. In the computational portion of the course, students will learn how to analyze whole-genome sequencing data and will identify mutations present in laboratory-evolved bacteria. This project-based course is part of a larger research project investigating co-evolution of conjugative plasmids and their bacterial hosts. Students will be exposed to fundamental questions concerning the mechanisms of evolution and will learn about current research in the rapidly expanding field of Experimental Evolution. No previous experience with bacterial culture, genomics, or computer programming is required.
Instructor(s): K. Cox
Area: Natural Sciences.

**AS.020.132. Biology, Policy, and the Media. 3.0 Credits.**
We live in the age of information. Through various forms of media we are constantly being inundated by data—whether or not we are aware of it. This information includes science as the media presents it to us. We will examine different topics in biology that are discussed in different forms of media. We will also look at how scientific research, and the way that it is reported to the layperson, is used to inform policy decisions. Some of the biological topics that we will discuss include human diseases and their treatment, stem cells and cloning, and genetically modified organisms. All of these topics have a significant effect on how we live our lives. The choices that we make based on the science we see affects our decisions when it comes to medical care, what we choose to eat, the manner in which we interact with our environment, and how we vote to enact science policy.
Instructor(s): J. Winger; R. Gupta
Area: Natural Sciences.
AS.020.135. Project Lab: Phage Hunting. 2.0 Credits.
This is an introductory course open to all freshman regardless of intended major. No science background is required. This is the first semester of a year-long research-based project lab course in which students will participate in a nation-wide program in collaboration with undergraduates at other colleges. Students will isolate and characterize novel bacteriophages (viruses that infect bacteria) from the environment using modern molecular biological techniques. The course includes two lab meetings per week. Continues in the spring. Each semester provides 2 credit hours of Natural Sciences (N) distribution credits and/or counts 2 hours toward the research requirement for the Molecular and Cellular Biology degree. No textbook is required. Freshmen only
Instructor(s): E. Fisher
Area: Natural Sciences.

AS.020.136. Phage Hunting II. 1.0 Credit.
This is an introductory course open to all freshman regardless of intended major. No science background is required. This is the second semester of a year-long research-based project lab course in which students will participate in a nation-wide program in collaboration with undergraduates at other colleges. In the spring semester, students will annotate the genome of a bacteriophage isolated and characterized by a student in AS.020.135, in preparation for submission to a database and eventual publication. Enrollment by permission of the instructor only.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): E. Fisher; M. Mefford
Area: Natural Sciences.

AS.020.137. Project Lab: Phage Discovery. 1.0 Credit.
In this small-section introductory research lab course, students are introduced to basic microbiological techniques as they isolate and characterize a bacteriophage, a virus that infects bacteria, from an environmental sample. One meeting per week. No textbook required. Modeled after the Phage Hunting project lab course, but with a focus on benchwork Students cannot receive credit for both AS.020.135 and AS.020.137.
Prerequisites: Not open to anyone who has taken AS.020.135
Instructor(s): E. Fisher
Area: Natural Sciences.

AS.020.140. Emerging Infectious Diseases. 3.0 Credits.
This class will investigate the infectious agents and evolutionary drivers of disease emergence and its consequences on public health. Additionally, the class will address epidemiological characteristics in settings of demographics, as well as surveillance mechanisms used to control disease emergence. We will focus on the underlying infectious diseases, factors governing microbial emergence, resistance, and endemics. Instruction format will include a combination of lectures, open discussions and student presentations to encourage broad participation.
Instructor(s): S. Winans
Area: Natural Sciences.

AS.020.151. General Biology I. 3.0 Credits.
This course is an introduction to biology from an evolutionary, molecular and cellular perspective. Specific topics and themes include evolutionary theory, the structure and function of biological molecules, mechanisms of harvesting energy, cell division, classical genetics and gene expression. This section will involve in-class problem solving and the use of assigned pre-class videos and questions.
Instructor(s): C. Roberson; R. Pearlman; R. Shingles
Area: Natural Sciences.

AS.020.152. General Biology II. 3.0 Credits.
This course builds on the concepts presented and discussed in General Biology I. The primary foci of this course will be on the diversity of life and on the anatomy, physiology, and evolution of plants and animals. There will be a special emphasis on human biology.
Prerequisites: Prereq: AS.020.151
Instructor(s): C. Roberson; R. Pearlman; R. Shingles
Area: Natural Sciences.

AS.020.153. General Biology Laboratory I. 1.0 Credit.
This course reinforces the topics covered in AS.020.151. Students participate in a semester-long project, identifying bacteria from Homewood campus soils using molecular biology techniques. Other laboratory exercises cover aspects of evolution, genomics and biochemistry. Cross-listed with Behavioral Biology. Student must have enrolled in AS.020.151 either this term or in past terms. Students who have credit for AP Biology but take General Biology Lab I will lose four credits of AP Biology credit. Cross-listed with Behavioral Biology.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.;AS.020.151
Instructor(s): R. Pearlman
Area: Natural Sciences.

AS.020.154. General Biology Lab II. 1.0 Credit.
This course reinforces the topics covered in AS.020.152. Laboratory exercises explore subjects ranging from evolution to anatomy and physiology. Students participate in a project using molecular biology techniques to determine whether specific foods are made from genetically engineered plants. Cross-listed with Behavioral Biology Students who have credit for AP Biology but take General Biology Lab II will lose all four credits of their overall credit for AP Biology.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): R. Pearlman
Area: Natural Sciences.

AS.020.161. Current Events in Biology I. 1.0 Credit.
In this lively and collaborative course, students discuss current events and controversies in biology ranging from bioterrorism to the health of the Chesapeake Bay.
Instructor(s): R. Pearlman
Area: Natural Sciences.

AS.020.162. Current Events in Biology II. 1.0 Credit.
Students will discuss current events and controversies in biology, ranging from genetic engineering to nanotechnology in medicine.
Instructor(s): R. Pearlman
Area: Natural Sciences.

AS.020.205. Introduction to Biological Molecules. 3.0 Credits.
This course presents an overview to biochemistry and molecular biology, especially focusing on biotechnology and medicine. Students will have classroom and laboratory experience and group presentations.
Prerequisite: High school level Chemistry and Biology (both with a grade of A).
Instructor(s): R. Homer; R. Shingles
Area: Natural Sciences.
AS.020.214. Self Organizing Patterns in Nature. 1.5 Credits.
The manifestations of all biological structures and related functions are the end effect of the formation and maintenance of complex molecular and cellular patterns. These patterns (macromolecules, cellular organelles, cells, and tissues) are assembled from their constituent parts under fundamental rules not too dissimilar to those that govern the formation of snowflakes or the dewdrops on a spider web. This course (lectures and student presentations) attempts to describe these common rules and to explain the formation and function of significant biological assemblies.
Instructor(s): E. Moudrianakis
Area: Natural Sciences.

AS.020.229. Introduction to Immunology. 2.0 Credits.
This course is designed to introduce students to the cells, major receptors and signals critical for understanding more advanced concepts in immunology. They should leave with a basic understanding of the players and events leading to an effective immune defense against pathogens. They should also begin to recognize disease consequences of certain immune malfunctions. Recommended Course Background: Biology
Instructor(s): A. Geis
Area: Natural Sciences.

AS.020.244. The Biology of Cancer. 2.0 Credits.
This course runs from June 30 - July 11. This course provides an overview of cancer and its diagnosis and treatment. Lectures, demonstrations, and discussions will explore the roles that genetic errors, growth factors, oncogenes, tumor suppressors, genetic caretakers, cell survival and death, angiogenesis, and metastasis play in cancer development. Covered topics also include cancer diagnosis, cancer prevention, genetic testing, treatment and patient self-advocacy. Course will include several guest experts to discuss topics of interest.
Instructor(s): M. Safford.

AS.020.303. Genetics. 3.0 Credits.
Presentation of the principles of heredity and variation, and their application to evolution and development; physico-chemical nature of the gene; problems of recombination; gene action.
Prerequisites: AS.020.330: Students may receive credit for AS.020.330 or AS.020.303, but not both.
Instructor(s): E. Fisher; K. Cunningham; M. Hoyt
Area: Natural Sciences.

AS.020.305. Biochemistry. 4.0 Credits.
The molecules responsible for the life processes of animals, plants, and microbes will be examined. The structures, biosynthesis, degradation, and interconversion of the major cellular constituents including carbohydrates, lipids, proteins, and nucleic acids will illustrate the similarity of the biomolecules and metabolic processes involved in diverse forms of life. Sophomores, Juniors, and Seniors Only.
Prerequisites: AS.030.206 OR AS.030.212 OR EN.540.202, may be taken concurrently.
Instructor(s): A. Coppola; C. Kaiser; J. Schildbach; K. Tifft Oshinnaiye; V. Hilser
Area: Natural Sciences.

AS.020.306. Cell Biology. 4.0 Credits.
How the molecules of living systems are organized into organelles, cells, tissues, and organisms will be explored, as well as how the activities of all of these are orchestrated and regulated to produce “life”—a phenomenon greater than the sum of its parts. Considerable emphasis is placed on experimental approaches to answering these questions. Topics covered include biological membranes, cytoskeletal elements, cell locomotion, membrane and protein traffic, the nucleus, second messengers, signal transduction, cell growth, the cell cycle, the extracellular matrix, cell contacts and adhesion, intracellular communication, epithelial structure and function, and the cell biology of early development and organ function. Sophomores, juniors, and seniors only. Recommended Course Background: (AS.020.151 or AS.020.305) or equivalent knowledge of biomolecules or AS.020.303.
Prerequisites: Cell Biology restriction: students who have completed EN.540.307 may not enroll.
Instructor(s): E. Fisher; K. Tifft Oshinnaiye; Y. Kim
Area: Natural Sciences.

AS.020.307. Enzymes, Metabolism and Metabolic Disorders. 3.0 Credits.
This course will cover basic and advanced concepts in enzymology and metabolic processes while focusing on how these processes contribute to human health and diseases. This course is composed of lectures, discussion sessions, and student presentations.
Instructor(s): Y. Lee
Area: Natural Sciences.

AS.020.312. Introduction to the Human Brain. 3.0 Credits.
This course explores the outstanding problem of biology: how knowledge is represented in the brain. Relating insights from cognitive psychology and systems neuroscience with formal theories of learning and memory, topics include (1) anatomical and functional relations of cerebral cortex, basal ganglia, limbic system, thalamus, cerebellum, and spinal cord; (2) cortical anatomy and physiology including laminar/columnar organization, intrinsic cortical circuit, hierarchies of cortical areas; (3) activity-dependent synaptic mechanisms; (4) functional brain imaging; (5) logictist and connectist theories of cognition; and (6) relation of mental representations and natural language.
Instructor(s): E. Hedgecock
Area: Natural Sciences.

AS.020.315. Biochemistry Project lab. 1.0 Credit.
This research project laboratory investigates the flow of energy through biological systems using focused examination of key cellular energy-conversion processes. Students will be introduced to the broad field of biochemical research through computational structural analysis, directed mutation, recombinant protein production, and enzymatic analysis. Participants will be trained in biochemical laboratory techniques and expected to contribute their findings to the scientific community using formal, academic communications.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module; AS.020.305 OR AS.250.307 OR AS.250.315. These may be taken concurrently.
Instructor(s): E. Johnson
Area: Natural Sciences.
AS.020.316. Cell Biology Lab. 1.0 Credit.
The Cell Biology Laboratory will use projects with the nematode C. elegans and mouse 3T3 cells in culture to illustrate experimental systems which are used in cell biology. Light microscopy, fluorescence microscopy, RNA interference, and Western blotting and the culture of nematodes and cells are techniques which will be used. Because we will be using growing organisms, there will be at least one week when students will have to visit the lab the day after their section meets to complete an experiment.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. AS.020.306 may be taken concurrently with AS.020.316 OR students can have completed EN.540.202 and EN.540.307 prior to enrolling in AS.020.316.
Corequisites: Students must have completed EN.540.307 prior to enrolling in AS.020.316.
Instructor(s): R. Horner
Area: Natural Sciences.

AS.020.317. Signaling in Development and Disease. 3.0 Credits.
An advanced undergraduate level seminar on current topics on signal transduction mechanisms underlying neuronal morphology, development and function. The proper functioning of the nervous system relies on the establishment of precise neuronal circuits through a developmental program including proliferation, neuronal migration, axonal growth, and neuronal survival. This course pertains to the extracellular cues and downstream neuronal signaling pathways that coordinate these key events during neuronal development. The course will also cover the role of aberrant signaling mechanisms in neuronal degeneration and disease. Recommended Course Background: AS.020.305, AS.020.306, and AS.080.306
Instructor(s): R. Kuruvilla
Area: Natural Sciences.

AS.020.328. Genomics: Theory and Practice. 2.0 Credits.
This course is designed to introduce the students to all facets of genomics and provide a hands-on approach to genomics research. The core of the course will be to introduce a biological problem that requires a genomics solution, design experiments, conduct them, obtain sequencing data and analyze them. In addition to this, lectures will also cover the current topics in and future of genomics. This course is conceived as an interactive one and student participation is required.
Prerequisites: AS.020.305 OR AS.020.303
Instructor(s): V. Balagopal
Area: Natural Sciences.

AS.020.329. Microbiology. 3.0 Credits.
This course explores the physiology and genetics of microorganisms within an evolutionary and ecological framework. Concepts in microbiology will be supported by molecular studies of microbial evolution and microbial communities including that of the human microbiome. Recommended Course Background: AS.020.305
Instructor(s): E. Fisher; J. Diruggiero
Area: Natural Sciences.

AS.020.331. Human Genetics. 2.0 Credits.
Will examine the growing impact of human genetics on the biological sciences, on law and medicine, and on our understanding of human origins. Topics include structure and evolution of human genome, genetic and physical mapping of human chromosomes, molecular genetics of inherited diseases and forensic genetics.
Instructor(s): E. Hedgecock
Area: Natural Sciences, Social and Behavioral Sciences.

AS.020.332. Photosynthesis by Land and Aquatic Organisms. 2.0 Credits.
This course analyzes the fundamental process of photosynthesis, the process on which all life on Earth depends for its existence. We begin from the level of the structural organization of the photosynthetic machinery and progress to the essentials of the photophysics of light capture by the primary pigments. Next we follow the conversion of photon flow to electron flow through the electron transport chain, and finally we study the formation of chemical gradients that serve as temporary "energy stores" utilized in the synthesis of the essential chemicals that are consumed to drive carbon dioxide and nitrogen fixation and yield biomass. Finally, we compare the specializations of land and aquatic photosynthetic systems that serve the two different ecosystems. Recommended Course Background: AS.020.305 or AS.020.306 or special permission by the instructor.
Instructor(s): E. Moudrianakis; R. Horner
Area: Natural Sciences.

AS.020.335. Bioenergetics. 2.0 Credits.
This course is a combination of lectures, student presentations and group discussions that address fundamental principles and also contemporary issues examining the way all forms of Life on Earth are ultimately dependent on sunlight to satisfy their food and energy requirements. We examine the steps from the capture of Physical energy (photons), to the development of electrochemical potentials and finally, to their utilization by cellular organelles towards the synthesis of the chemical "currency" that fuels all biological processes (biosynthesis, cell communication, movements, etc.). Special emphasis will be on current developments in biotechnologies that utilize microbial populations to supply us with fuels and also to clean up environmental hazards. The course will also consider ways to extract lessons from Nature's successful designs and harmonious adaptations so that we, in the long run, can utilize them towards a minimization of our negative impact on the environment.
Note for Juniors and Seniors: in addition to attending the lectures they are expected to analyze assigned relevant research articles and submit reports of their analyses and conclusions. Admission, by approval of instructor.
Instructor(s): E. Moudrianakis
Area: Natural Sciences.

AS.020.337. Stem Cells & the Biology of Aging & Disease. 2.0 Credits.
This will be a team-taught lecture course that focuses on the properties of stem cells, their possible role in cancer (breast and prostate), stem cell aging, and the potential utilization of stem cells for therapy. Topics will include: mechanisms of stem cell renewal, stem cell potency, the impact of the stem cell niche, stem cells and the hematopoietic system, stem cells and the neural system, stem cells in the male and female gonads, induced pluripotent stem cells and cellular reprogramming, stem cell changes with aging, and ethical and policy issues in stem cell research and use. Most lectures will be research-oriented. Students will be expected to read and critically analyze current literature, with an emphasis on the experimental bases from which our current understandings derive.
Prerequisites: AS.020.305 (Biochemistry) or AS.020.306 (Cell Biology) or EN.580.221 (Molecules and Cells) or EN.540.307 (Cell Biology for Engineers) or permission of instructor.
Instructor(s): B. Zirkin
Area: Natural Sciences.
AS.020.340. Developmental Genetics Lab. 2.0 Credits.
This laboratory explores the genetics of living organisms, and students in each section will therefore be required to return to lab on succeeding days to observe and record the results of their experiments. Recommended Course Background: AS.020.316
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module; AS.020.303 can be taken prior to or during enrollment in AS.020.340.
Instructor(s): C. Norris
Area: Natural Sciences.

AS.020.341. Quantitative Methods in Biology. 3.0 Credits.
This course reviews a variety of quantitative tools commonly applied in biological research. The course is divided into three sections. The first section covers dynamical modeling of biological processes, with an emphasis on chemical kinetics and cell signaling. The second section is devoted to statistical tools used to analyze datasets, as well as techniques to reduce data complexity and clustering. The third section applies the learned statistical tools to image processing, as well as commonly used techniques to process and extract features from images. Students will learn the quantitative concepts during lecture and discussion, and apply these concepts in lab sections where they will use MATLAB to apply the learned tools to biological problems.
Prerequisites: AS.020.305 AND AS.020.305 and one year of calculus.
Instructor(s): A. Gordus
Area: Natural Sciences.

AS.020.344. Virology. 3.0 Credits.
This course will cover basic principles of viral replication and pathogenesis, as well as the host response to viral infection. It will then focus on several viruses of interest, including HIV-1, Influenza, Human Papilloma Virus, Hepatitis C, Ebola Virus, and Zika Virus.
Prerequisites: AS.020.305 OR AS.250.315
Instructor(s): K. Beemon
Area: Natural Sciences.

AS.020.346. Immunobiology. 3.0 Credits.
A course for upper level undergraduates that introduces the molecules, cells, systems and biology of the immune system.
Prerequisites: AS.020.306 AND (AS.020.303 OR AS.020.330)
Instructor(s): J. Schildbach
Area: Natural Sciences.

AS.020.347. AIDS. 3.0 Credits.
AIDS is the world's deadliest infectious disease. This course will cover the biology of human immunodeficiency virus (HIV, the infectious agent that causes AIDS), the effects of HIV on the immune system, the pharmacology of the anti-viral agents that are used to suppress HIV infection, and the ongoing quest for an HIV vaccine. Because HIV drugs cannot cure HIV-infected individuals and no HIV vaccine yet exists, we will also study the long-term consequences of HIV infection including opportunistic infections, comorbid conditions, and the HIV-related cancers Kaposi's Sarcoma and AIDS-Related lymphoma. Recommended Course Background: AS.020.306
Prerequisites: AS.020.306
Instructor(s): T. Schroer
Area: Natural Sciences.

AS.020.350. Introduction to Clinical Medicine. 2.0 Credits.
Perm. Req'd. Post-Bac Students Only
Instructor(s): E. Ruiz, M. Brady, W. Merritt, W. Ziai
Area: Natural Sciences.

AS.020.351. Cancer Biology. 3.0 Credits.
While the “war on cancer” has produced modest victories with respect to clinical outcomes, our knowledge of the cellular mechanisms of cancer is now vast and represents one of the most significant scientific achievements of the past 40 years. Key aspects of cancer biology will be covered with a combination of textbook and original literature readings. Topics will include cancer cell characteristics, oncogenes, tumor suppressor genes, apoptosis, metastasis and immuno-surveillance of cancer cells. Application of our knowledge to the rational treatment of cancer will also be discussed.
Prerequisites: Cell Biology 020.306 or permission of instructor
Instructor(s): M. Hoyt
Area: Quantitative and Mathematical Sciences.

AS.020.355. Fundamentals of Genome Informatics. 3.0 Credits.
This course will cover fundamental methods used in the analysis of genomic sequencing data, with a particular focus on recent developments in comparative and functional genomic assays. In particular, we will cover approaches for 1) genomic sequencing and assembly, including resequencing and personal genomes, 2) comparing genomes and modeling genome evolution, 3) identifying functional elements using both functional genomics and computational models. While the course will focus on particular problems in genomics, we will emphasize core algorithmic concepts that generalize to the analysis of other types of biological data.
Prerequisites: General Biology 020.151-152 and (Calculus I 110.106 or Calculus I 110.108)
Instructor(s): J. Taylor
Area: Natural Sciences.

AS.020.360. Gene Regulation During Development and Disease. 3.0 Credits.
This course examines how regulation of gene expression impacts development and disease. The course will focus on the mechanisms controlling transcriptional, post-transcriptional, translational, and post-translational regulation. For each topic, one class will be a lecture/discussion of key concepts and experimental approaches followed by a class with student-led presentations of related publications. Recommended Course Background: AS.020.303 and AS.020.305.
Instructor(s): R. Johnston
Area: Natural Sciences.
AS.020.361. Advanced Research Lab in Cell and Molecular Biology. 3.0 Credits.
An intensive research laboratory course on single-molecule, live-cell imaging of chromatin factors designed for undergraduate students with interests in biochemistry, molecular, cellular and computational biology. The course introduces the use of advanced fluorescence microscopy to visualize the single-molecule dynamic behaviors and spatial distributions of important nuclear proteins and chromatin factors in living cells of the model eukaryote Saccharomyces cerevisiae (baker's yeast). Students will learn and apply imaging and computational tools to localize and track single protein molecules in real time and calculate their dynamics. Students are expected to interpret and integrate data to acquire conceptual insights on chromatin functions, e.g. how chromatin proteins, enzymes, and very large protein complexes are organized in nuclear space and time, and how the accessibility of chromatin targets is influenced by changes in the epigenetic landscape. Students will also gain practical experience in yeast molecular genetics by engineering protein tags on designated nuclear and chromatin factors, and evaluating protein functionality under natural levels of expression. Students will have 24/7 access to laboratory facilities and are expected to commit ~12 hours/week to their projects.
Prerequisites: AS.020.305 AND AS.020.306 and 1 year of calculus.
Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Wu
Area: Natural Sciences.

AS.020.362. Single Molecule Approaches to Biology. 3.0 Credits.
This course examines how recently developed single-molecule methods have enhanced our understanding of cellular processes. The ability to observe and manipulate individual biological macromolecules has revolutionized our understanding of the machines and processes that enable life. The course will provide an overview of single-molecule approaches and discuss relevant publications that exemplify how these methodologies are applied to biological problems. For each approach, key concepts will be introduced in a lecture/discussion, followed by a student-led presentation of a related publication. Recommended coursework: Physics II.
Prerequisites: AS.020.305 OR AS.250.316
Instructor(s): C. Kaiser
Area: Natural Sciences.

AS.020.363. Developmental Biology. 3.0 Credits.
This class will explore the development of animals from a single fertilized egg into a fully formed organism. We will emphasize experimental methods to understand the molecular mechanisms controlling development.
Prerequisites: AS.020.306 AND (AS.020.330 OR AS.020.303)
Instructor(s): C. Norris; M. Van Doren
Area: Natural Sciences.

AS.020.364. Intro To Human Skeleton. 3.0 Credits.
This course will provide a basic understanding of human skeletal biology, including bone composition and bone growth, recognition of skeletal elements, functional anatomy of different skeletal systems, comparative anatomy, and forensic anthropology (sexing and aging, body size reconstruction, bone pathology). Lectures will be combined with hands-on experience with bone models and real bone specimens.
Instructor(s): C. Ruff
Area: Natural Sciences.

AS.020.366. Primate Adaptation and Evolution. 3.0 Credits.
A close look at our closest relatives, the primates. Topics include: evolutionary theory, primate evolution, primate behavior and ecology, human evolution, and modern human variation.
Instructor(s): J. Perry
Area: Natural Sciences.

AS.020.367. Develop Biology Lab. 2.0 Credits.
This laboratory is designed to give students exposure to the different techniques and organisms used in Developmental Biology research. Our primary goal in this course is to help you learn to think like a scientist and gain a better understanding of how scientists study development. With that goal in mind, students design and execute an independent project during the second half of the semester. The independent projects will culminate with a poster session in which the project and its outcome will be shared with the other students. Please be aware that because we are working with live developing embryos, you will sometimes be required to return to lab between scheduled class times.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Norris.

AS.020.368. Comparative Animal Physiology. 3.0 Credits.
This class examines animal physiology from an evolutionary and comparative viewpoint. The goal is to examine the commonalities, as well as unique differences, in how various animal organisms address the necessary life functions. Topics will include metabolism, neural systems, respiration, muscle systems, water and salt homeostasis, thermal regulation, and reproduction.
Prerequisites: AS.020.305 OR AS.020.306
Instructor(s): A. Coppola; E. Fisher
Area: Natural Sciences.

AS.020.369. Evolution. 3.0 Credits.
This course takes a broad look at the impact of natural selection and other evolutionary forces on evolution. Emphasis is placed on what we can learn from genome sequences about the history of life, as well as current evolutionary pressures. Recommended Course Background: AS.020.306, AS.020.330, or permission required
Instructor(s): C. Norris
Area: Natural Sciences.
AS.020.380. Chromatin, Chromosomes and The Cell Nucleus. 3.0 Credits.
The course will present analysis of the structural basis of the genome organization in a eukaryotic nucleus and the utilization of its genomic content. We start with the analysis of the fluctuations of the structure of the double helix in response to its cellular microenvironment that yield DNA structural and functional polymorphism. Next we will deal with the mechanics of DNA compaction into chromatin and the differentiation of the chromatin structure at the level of the nucleosome via histone variants and posttranslational modifications and chromatin-based epigenetics. We will next move to chromosomal territories, chromosomal imprinting and chromosome inactivation. Finally, a few lectures will focus on selected topics of special interests that bridge current basic discoveries with potential medical applications such as the nature of telomeres and telomerase-related diseases; the role of histone octamer tails in epigenetics; transcription factors and the regulated expression of the genome. Whenever possible, paradigms will be used that correlate chromatin differentiation to certain human diseases. 
Prerequisites: AS.020.305 OR AS.020.306; AS.020.303 with approval of the instructor only.
Instructor(s): K. Tifft Oshinnaiye
Area: Natural Sciences.

AS.020.385. Epigenetics. 3.0 Credits.
Course description: This course emphasizes epigenetic regulatory mechanisms including DNA methylation, histone modifications, histone variants, non-coding RNA regulation, and chromatin remodeling, etc. We will discuss the broad impact of epigenetic regulation in various biological events, ranging from stem cell activity, small RNAs' and long non-coding RNAs' function, to transgenerational epigenetic inheritance and human diseases. We will mainly use recent literatures to discuss various topics. There are both students' presentation and writing components for this course. Students will be assigned a series of papers for their presentation and faculty will meet with student presenters ahead of the time to go through the presentation content. 
Prerequisites: AS.020.303 OR AS.020.330
Instructor(s): J. Kim; X. Chen
Area: Natural Sciences.

AS.020.392. Anatomy & Physiology. 3.0 Credits.
Lectures will cover descriptive and functional anatomy; and should leave students with a better understanding of anatomical terminology and the relationship of structure to biological function within the human body. Additionally, students will gain perspective on human disease as they study the anatomical and functional basis of clinical symptoms. 
Instructor(s): A. Ramos Amigo; L. Abalde-Atristain; M. Iglesias Lozano
Area: Natural Sciences.

AS.020.401. Advanced Seminar: Molecular and Cellular Biology. 3.0 Credits.
This is a weekly seminar designed for graduate students enrolled in the B.A./M.S. and Ph.D. programs. The seminar involves student presentations of research and discussion of topics of current interest in the field. BA/MS candidates only. 
Instructor(s): K. Tifft Oshinnaiye
Area: Natural Sciences.

AS.020.402. Seminar: Molecular & Cellular Biology. 3.0 Credits.
This is a weekly seminar designed for students enrolled in the BA/MS program. The seminar involves student presentations of research and discussion of topics of current interest in the field. BA/MS students only. 
Instructor(s): K. Tifft Oshinnaiye
Area: Natural Sciences.

AS.020.415. Advanced Biomedical Research. 3.0 Credits.
This course for advanced undergraduates includes classroom instruction in interdisciplinary research approaches and lab work on an independent research project in the lab of a Bloomberg Distinguished Professor. Lectures will focus on cross-cutting techniques such as data visualization, statistical inference, and scientific computing. In addition to two 50-minute classes per week, students will commit to working approximately 3 hours per week in the lab of one of the professors. The student and professor will work together to schedule the research project. Students will present their work at a symposium at the end of the semester. This course can be used as 1 credit of independent research for the MCB major requirement. 
Instructor(s): M. Schatz
Area: Natural Sciences.

AS.020.420. Build-a-Genome. 4.0 Credits.
In this combination lecture/laboratory "Synthetic Biology" course students will learn how to make DNA building blocks used in an international project to build the world's first synthetic eukaryotic genome, Saccharomyces cerevisiae v. 2.0. Please study the wiki www.syntheticyeast.org for more details about the project. Following a biotechnology boot-camp, students will have 24/7 access to computational and wet-lab resources and will be expected to spend 15-20 hours per week on this course. Advanced students will be expected to contribute to the computational and biotech infrastructure. Co-listed with EN.580.420, AS.020.451 and EN.540.420. Successful completion of this course provides 3 credit hours toward the supervised research requirement for Molecular and Cellular Biology majors, or 2 credit hours toward the upper level elective requirement for Biology or Molecular and Cellular Biology majors. Must understand fundamentals of DNA structure, DNA electrophoresis, and analysis, Polymerase Chain Reaction (PCR), and must be either a) Experienced with molecular biology lab work or b) Adept at programming with a biological twist. 
Instructor(s): J. Bader; K. Zeller
Area: Natural Sciences.

AS.020.441. Mentoring in General Biology. 1.0 Credit.
This course provides students who have taken General Biology I & II the opportunity to mentor new students in General Biology I & II. Mentors collaborate with faculty on how to lead effective sessions, help student teams complete team assignments, and generally help students understand difficult concepts and principles in biology. Mentors must have a firm command of the topics covered in biology and must meet with both faculty and students through the course of the semester. To become a mentor, students must have successfully completed AS.020.151/152, must apply using the form on the Biology Dept. Website, and must be accepted by the instructors. The deadline to apply is April 1st. S/U only. Perm. Req’d
Instructor(s): C. Roberson; R. Pearlman; R. Shingles
Area: Natural Sciences.
AS.020.442. Mentoring in General Biology. 1.0 Credit.
This course provides students who have taken General Biology I & II the opportunity to mentor new students in General Biology I & II. Mentors collaborate with faculty on how to lead effective sessions, help student teams complete team assignments, and generally help students understand difficult concepts and principles in biology. Mentors must have a firm command of the topics covered in biology and must meet with both faculty and students through the course of the semester. To become a mentor, students must have successfully completed AS.020.151/AS.020.152, must apply using the form on the Biology Department website, and must be accepted by the instructors. The deadline to apply is April 8th. Recommended Course Background: AS.020.151/AS.020.152
Instructor(s): R. Pearlman; R. Shingles
Area: Natural Sciences.

AS.020.451. Build-a-Genome Mentor. 4.0 Credits.
In this combination lecture/laboratory, "Synthetic Biology" course students will learn how to make DNA building blocks used in an international project to build the world’s first synthetic eukaryotic genome, Saccharomyces cerevisiae v. 2.0. Please study the wiki www.syntheticyeast.org for more details about the project. Following a biotechnology boot-camp, students will have 24/7 access to computational and wet-lab resources and will be expected to spend 15-20 hours per week on this course. Advanced students will be expected to contribute to the computational and biotech infrastructure. Must understand fundamentals of DNA structure, DNA electrophoresis, and analysis, Polymerase Chain Reaction (PCR) and must be either a) Experienced with molecular biology lab work or b) Adept at programming with a biological twist.
Instructor(s): J. Bader; K. Zeller
Area: Natural Sciences.

AS.020.501. Introduction Independent Study. 3.0 Credits.
An independent course of study may be pursued under the direction of an adviser on those topics not specifically listed in the form of regular courses. Freshmen and Sophomores only. Perm. Req’d.
Instructor(s): Staff.

AS.020.502. Introduction Independent Study. 0.0 - 3.0 Credits.
Instructor(s): B. Kondo; K. Cunningham; R. Horner.

AS.020.503. Introduction To Research. 3.0 Credits.
Perm. Req’d. Freshmen and Sophomores only
Instructor(s): Staff.

AS.020.504. Introduction to Research. 0.0 - 3.0 Credits.
Perm. Req’d. Freshmen or Sophomores only
Instructor(s): Staff.

AS.020.505. Internship - Biology. 0.0 - 3.0 Credits.
An independent course of study may be pursued under the direction of an adviser on those topics not specifically listed in the form of regular courses. Consent of adviser required.
Instructor(s): C. Roberson; H. Zhao.

AS.020.506. Internship - Biology. 1.0 Credit.
Instructor(s): Staff.

AS.020.511. Independent Study. 3.0 Credits.
An independent course of study may be pursued under the direction of an adviser on those topics not specifically listed in the form of regular courses. Perm. Req’d.
Instructor(s): Staff.

AS.020.512. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.020.513. Research Problems. 3.0 Credits.
Planning and conducting original laboratory investigations on biological problems, collection and analysis of data, reporting of results. Juniors and Seniors Only. Recommended Course Background: Permission of full-time faculty member in Biology dept.
Instructor(s): Staff.

AS.020.514. Research Problems. 0.0 - 3.0 Credits.
Perm. Req’d. Juniors and Seniors only
Instructor(s): Staff.

AS.020.551. Mentored Research. 9.0 Credits.
This courses provide BA/MS students with intensive research experience for a full academic year. Students in the program work under the direction of a research mentor on an original research project, produce a written report in the form of a thesis, and make a presentation of the work to the Biology Department. BA/MS or BS/MS candidates only.
Instructor(s): R. Horner.

AS.020.553. Mentored Research. 9.0 Credits.
BA/MS candidates only.
Instructor(s): H. Zhao; K. Beemon; M. Bessman; R. Horner.

AS.020.554. Mentored Research Program in Cellular and Molecular Biology. 3.0 Credits.
BA/MS Candidates Only
Instructor(s): R. Horner.

AS.020.591. Summer Research Experience. 0.0 - 3.0 Credits.
Instructor(s): J. Schildbach.

AS.020.594. Internship - Summer. 1.0 Credit.
Instructor(s): Staff.

AS.020.597. Research. 3.0 Credits.
Instructor(s): Staff.

AS.020.599. Independent Study. 3.0 Credits.
Instructor(s): C. Norris; M. Bessman; R. Horner; T. Schroer.

This course involves 30 minute sessions with each member of the training faculty. It is designed to acquaint incoming graduate students with the research topics and research philosophy of each laboratory. This should help students choose future rotations. More generally the course provides a range of perspectives on the future of specific fields and strategies for success in science. First year Biology Graduate students only
Instructor(s): Staff.

AS.020.607. Quantitative Biology Bootcamp.
Quantitative and computational methods have become essential to modern biological research. The goal of this course is to provide an introduction to basic skills that will enable students to employ these methods. Students will learn how to work in a command line shell and use software to perform analyses of large biological datasets. Students will learn basic programming using the Python language. Throughout the course students will apply the skills learned to practical analysis problems emphasizing parsing and working with biological data formats, exploratory data analysis and visualization, and numerical and statistical methods. This course is only open to first-year students in the CMB program and will be held from September 2nd through September 5th, 2014.
Instructor(s): F. Tan; J. Taylor.
**AS.020.612. Introduction to the Human Brain.**
This course explores the outstanding problem of biology; how knowledge is represented in the brain. Relating insights from cognitive psychology and systems neuroscience with formal theories of learning and memory, topics include (1) anatomical and functional relations of cerebral cortex, basal ganglia, limbic system, thalamus, cerebellum, and spinal cord; (2) cortical anatomy and physiology including laminar/columnar organization, intrinsic cortical circuit, hierarchies of cortical areas; (3) activity-dependent synaptic mechanism; (4) functional brain imaging; (5) logicist and connectist theories of cognition; and (6) relation of mental representations and natural language. Co-listed with AS.020.312.
Instructor(s): E. Hedgecock.

**AS.020.613. Biology Science Writing.**
Students will learn how to write abstracts and grant proposals, organize scientific manuscripts and thesis dissertations by writing and rewriting about their own research and editing other students’ work. Focus will be on structure, substance, accessibility, and clarity of writing. Biology Graduate students only. Permission Req’d.
Instructor(s): A. Huang.

**AS.020.614. Signaling in Development and Disease.**
A seminar on current topics on signal transduction mechanisms underlying neuronal morphology, development and function. The proper functioning of the nervous system relies on the establishment of precise neuronal circuits through a developmental program including proliferation, neuronal migration, axonal growth, and neuronal survival. This course pertains to the extracellular cues and downstream neuronal signaling pathways that coordinate these key events during neuronal development. The course will also cover the role of aberrant signaling mechanisms in neuronal degeneration and disease.
Instructor(s): R. Kuruvilla
Area: Natural Sciences.

**AS.020.616. Planets, Life and the Universe.**
This multidisciplinary course explores the origins of life, planets’ formation, Earth’s evolution, extrasolar planets, habitable zones, life in extreme environments, the search for life in the Universe, space missions and planetary protection. Grad Students Only. Co-listed with AS.020.334, AS.171.333 and AS.270.335
Instructor(s): J. Diruggiero; N. Levin
Area: Natural Sciences.

**AS.020.617. Quantitative Biology Lab I.**
This computer lab is designed for first year CMDB graduate students to enhance their quantitative skills for fall core courses. This course will cover quantitative and computational analysis of biological datasets, emphasizing molecular biology. In a hands on lab setting, students will carry learn to perform essential analyses including assembly of genomes, detection of DNA methylation, analysis of transcription factor binding and motifs, detecting genome variation, measuring expression of genes, and understanding genome evolution.
Instructor(s): J. Taylor.

**AS.020.618. Quantitative Biology Lab II.**
This computer lab is a continuation of the fall quantitative biology lab for CMDB graduate students. This semester will cover quantitative and computational modeling of selected topics from biophysics, cellular biology, and developmental biology
Instructor(s): B. Clarkson.

**AS.020.619. Communicating Science.**
"Communicating Science" is a required course for 2nd year students in the CMDB program. It will be held at the Carnegie Institution for Science Bldg., 3520 San Martin Drive commencing August 30th, 2018. The course is intended to provide students with practical experience organizing oral presentations, preparing science manuscripts, and writing an application for an NIH National Research Service Award (F31). Participants will also learn about criticially reviewing grants and papers. Instructor: Dr. M.E. Halpern.
Instructor(s): A. Huang; M. Halpern.

**AS.020.629. Microbiology.**
This course explores the physiology and genetics of microorganisms within an evolutionary and ecological framework. Concepts will be supported by primary literature exploring microbial evolution and microbial communities including that of the human microbiome.
Instructor(s): J. Diruggiero.

**AS.020.630. Human Genetics.**
Will examine the growing impact of human genetics on the biological sciences, on law and medicine, and on our understanding of human origins. Topics include structure and evolution of human genome, genetic and physical mapping of human chromosomes, molecular genetics of inherited diseases and forensic genetics.
Instructor(s): E. Hedgecock
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.020.637. Genomes & Development.**
This course covers gametogenesis, embryogenesis, post-embryonic development, genetic analysis, developmental genetics, model developmental systems, and cell determination. Biology graduate students only except with written permission from the instructor.
Instructor(s): Staff.

**AS.020.643. Graduate Virology.**
Instructor permission required for undergraduate students
Instructor(s): K. Beemon
Area: Natural Sciences.

**AS.020.644. RNA.**
A graduate seminar course that will explore RNA from its beginning in the primordial RNA world to its present-day roles in gene regulation in bacteria, mammals, and viruses. Topics will include: The early RNA world, Riboswitches, Ribozymes, evolution of protein synthesis, splicing, telomerase, RNA interference, microRNAs, long non-coding RNAs, Viral non-coding RNAs, and RNA therapeutics. Biology PHD students only. MCB MS students with instructor's permission during ADD/DROP Period.
Instructor(s): K. Beemon
Area: Natural Sciences.
The course will present analysis of the structural basis of the genome organization in a eukaryotic nucleus and the utilization of its genomic content. We start with the analysis of the fluctuations of the structure of the double helix in response to its cellular microenvironment that yield DNA structural and functional polymorphism. Next we will deal with the mechanics of DNA compaction into chromatin and the differentiation of the chromatin structure at the level of the nucleosome via histone variants and posttranslational modifications and chromatin-based epigenetics. We will next move to chromosomal territories, chromosomal imprinting and chromosome inactivation. Finally, a few lectures will focus on selected topics of special interests that bridge current basic discoveries with potential medical applications such as the nature of telomeres and telomerase-related diseases; the role of histone octamer tails in epigenetics; transcription factors and the regulated expression of the genome. Whenever possible, paradigms will be used that correlate chromatin differentiation to certain human diseases.
Instructor(s): E. Moudrianakis
Area: Natural Sciences.

This course examines how recently developed single-molecule methods have enhanced our understanding of cellular processes. The ability to observe and manipulate individual biological macromolecules has revolutionized our understanding of the machines and processes that enable life. The course will provide an overview of single-molecule approaches and discuss relevant publications that exemplify how these methodologies are applied to biological problems. For each approach, key concepts will be introduced in a lecture/discussion, followed by a student-led presentation of a related publication.
Instructor(s): C. Kaiser
Area: Natural Sciences.

AS.020.664. Advanced Graduate Biophysical Chemistry.
This course provides an overview of protein and nucleic acid structure, fundamentals of thermodynamics and kinetics, ligand binding, folding and stability of macromolecules, and the principles of biophysical methods such as fluorescence spectroscopy, NMR, and X-ray crystallography. Biology PhD students only. Monday Discussion Session is optional. Recommended Course Background: AS.020.305, AS.020.306
Instructor(s): E. Freire; R. Schleif

AS.020.674. Graduate Biophysical Chemistry.
This course will provide an overview of protein and nucleic acid structure, fundamentals of thermodynamics and kinetics, ligand binding, folding and stability of macromolecules, and the principles of biophysical methods such as fluorescence spectroscopy, NMR, and X-ray crystallography. Biology PhD students only. Monday Discussion Session is optional. Recommended Course Background: AS.020.305, AS.020.306
Instructor(s): E. Freire; R. Schleif

AS.020.679. Advanced Biological Microscopy.
This course is intended to build upon the basic skills students acquired in the previous course. Students will be required to work on actual ongoing research projects. The course will emphasize the integration and use of various light and electron microscopic techniques and their application to various research related questions. The course will have primarily a practical "hands-on" component; but will also include theoretical considerations as students will read, analyze, and discuss current journal articles.
Instructor(s): J. McCaffery
Area: Natural Sciences.

The creation and implementation of new approaches to the drug discovery and development process is a very active area of research. Currently, only one compound out of 5,000 that enter preclinical studies becomes a drug. Moreover, the development process is time consuming, lasting more than ten years on average. The rate of failure is extremely high. It has become evident that this field is in urgent need of revolutionary changes. This course will cover drug discovery issues ranging from the identification of hits to their optimization as drug candidates. Current as well as novel and proposed approaches aimed at accelerating discovery, potency optimization, selectivity, pharmacokinetics and other drug properties will be discussed. Grad students only
Instructor(s): J. McCaffery
Area: Natural Sciences.

All aspects of cell biology are reviewed and updated in this intensive course through critical evaluation and discussion of the current scientific literature. Topics include protein trafficking, membrane dynamics, cytoskeleton, signal transduction, cell cycle control, cell physiology, and the integration of these processes in neurons. Recommended Course Background: AS.020.306
Instructor(s): R. Kuruvilla

AS.020.687. Foundations & Applications of Molecular Biology.
An advanced course for graduate students in the biological sciences, although undergraduates are welcome, that stresses fundamental principles and analysis. It is generally focused on gene and protein structure and function.
Instructor(s): R. Schleif
Area: Natural Sciences.

AS.020.699. CMDH Responsible Conduct in Research.
This course involves discussions of ethical conduct and the responsible practice of scientific research. Department signature only; restricted to graduate students in Biology PhD students only.
Instructor(s): Staff.
**AS.020.731. Critical Thinking in Biology.**

In this course, students will critically analyze modern and seminal primary research papers in molecular, cellular and developmental biology. This analysis will emphasize the logic and experimental design of a selected set of outstanding research publications from diverse fields. Graduate students enrolled will develop the skills needed to efficiently understand and critique the rapidly expanding literature and growing diversity of biological research methods. In preparation for each class, all course participants will be expected to read and thoroughly critique the assigned paper(s). All students will submit a short, critical analysis of each paper in advance of the class session in which the paper(s) will be covered. A student will lead each discussion (once per semester, dependent upon enrollment). Recommended Course Background: AS.020.637, AS.020.668, AS.020.674, and AS.020.686

**Instructor(s): D. Zappulla; R. Johnston.**

**AS.020.739. Topics in Biochemistry.**

The course is open to graduate students and advanced undergraduates - Undergraduates with instructor's permission - "Topics in Biochemistry" deals with minireviews taken from the Journal of Biological Chemistry. Students select a topic of their choice from the "Compendium of Minireviews" for the current year, and present it before the class for discussion.

**Instructor(s): M. Bessman.**

**AS.020.753. Logic and Methods in Modern Biology.**

The purpose of this course is to gain experience in critical thinking about the logic and methods used in modern biological research. The main approach will be the critical reading, presentation, and discussion of primary research papers, and the preparation and presentation of a research proposal. It is held once a week on the NIH Bethesda campus. Grad students only.

**Prerequisites: AS.020.637 AND AS.020.668 AND AS.020.674**

**Instructor(s): M. Lichten; O. Cohen-Fix**

**Area: Natural Sciences.**

**AS.020.801. Research – Biological Problems.**

Independent research for the Ph.D. dissertation. Biology Ph.D. students only

**Instructor(s): V. Hilser.**

**AS.020.802. Research-Biological Problems.**

Biology Graduate students only.

**Instructor(s): Staff.**

**AS.020.823. Introduction to Biology Research.**

First year Biology Graduate Students only

**Instructor(s): Staff.**

**AS.020.824. Introduction to Biology Research.**

First year Biology Graduate Students only

**Instructor(s): Staff.**

**AS.020.825. Introduction to Research.**

Open to first year Biology graduate students only.

**Instructor(s): Staff.**

**AS.020.826. Introduction to Biology Research.**

Open to first year Biology graduate students only.

**Instructor(s): Staff.**

**Cross Listed Courses**

**Chemistry**

**AS.030.623. Molecular Synthetic Biology.**

Principles and methods for the design and optimization of new biological systems, from a molecular perspective. Topics include: introduction to genetic parts and modern methods for their assembly; synthesis and incorporation of nucleic acids at the level of nucleotides, genes, and genomes; design of genetic programs; library generation and screening; directed evolution and its application to create new proteins and metabolic pathways; computational design of protein and RNA?using physical and bioinformatic approaches; non-canonical amino acids and genetic code expansion. This course will also feature critical evaluation of the primary literature in this fast-paced field, and practical experience with relevant software and computational tools.

**Instructor(s): S. Fried.**

**Neuroscience**

**AS.080.305. Neuroscience: Cellular and Systems I. 3.0 Credits.**

(Formerly Nervous Systems I) Neuroscience: Cellular and Systems I is a fully integrated, two-semester course that surveys the cellular and molecular biology of neurons as well as the structure and function of the nervous system. Students must register for Neuroscience: Cellular and Systems II offered in the second term. Course open to JHU undergraduates only.

**Prerequisites: AS.080.203 OR AS.050.203 OR AS.200.141 or 080.105 or Permission**

**Instructor(s): H. Zhao; S. Hendry**

**Area: Natural Sciences.**

**Biophysics**

**AS.250.351. Reproductive Physiology. 2.0 Credits.**

Focuses on reproductive physiology and biochemical and molecular regulation of the female and male reproductive tracts. Topics include the hypothalamus and pituitary, peptide and steroid hormone action, epididymis and male accessory sex organs, female reproductive tract, menstrual cycle, ovulation and gamete transport, fertilization and fertility enhancement, sexually transmitted diseases, and male and female contraceptive methods. Introductory lectures on each topic followed by research-oriented lectures and readings from current literature.

**Instructor(s): B. Zirkin**

**Area: Natural Sciences.**

**Interdepartmental**

**AS.360.101. Discover Hopkins: Physiology & Disease. 1.0 Credit.**

An understanding of physiology is an invaluable part of any budding physicians repertoire. In this, the second of a two-part course introducing classical physiology in the human body, and how it functions in both health and disease, we will cover guts (renal, digestive, and immune systems), as well as hormones (basic endocrinology) and sex/reproductive physiology. In addition to classroom study, students will be challenged to synthesize their newfound knowledge by taking part in immersive afternoon activities. While this represents a wholly separate course, students should also consider taking the first part of this series (“Physiology & Disease: Core Systems) to bolster their understanding. Ultimately, knowledge of basic physiological processes should impact the student’s future research and serve as a foundation for all future scientific and biomedical endeavors. There are no prerequisites for the course, but a background in biology is help.

**Instructor(s): C. Ciarleglio**

**Area: Natural Sciences.**
AS.360.163. Discover Hopkins Medical School Intensive. 1.0 Credit.
The 2-week program is designed to engage bright high school students
who are interested in medicine. Taught and guided by Johns Hopkins
University School of Medicine faculty post-docs and fellows, students
will learn basic knowledge and techniques related to surgery, internal
medicine, pediatrics, emergency medicine, and biomedical science
by participating in interactive lectures and labs, experiencing hands-
on medical trainings at Johns Hopkins Medical Simulation Center,
interviewing and networking with diverse medical professionals, and
visiting the world-renowned hospital.
Instructor(s): Staff
Area: Natural Sciences.

Biomedical Engineering
EN.580.220. The Science of Medicine: Thinking Critically. 3.0 Credits.
This course investigates some of the most pressing issues in biomedical
science with direction from leading clinicians, scientists, policy
experts, and industry professionals. The underlying science and ethical
implications for topics such as "Rogue Clinics and Designer Babies: How
can I decide the genotype of my offspring – and should I?" "Mosquito-
borne Diseases: Fighting an enemy that outnumbers us 15,000 to
one with genetics," and "HIV: Posing for a cure versus settling for a
treatment: What makes healthcare sufficient" are explored. The class
is taught in a flipped method: students will be expected to listen to e-
presentations at home so that class time can be devoted to problem
solving activities, experimental design, debates, and discussion. The goal
of this course is to teach students how to think critically and to expose
students to the great unknowns that remain in science today.
Instructor(s): C. Hanlon; E. Haase; H. Goldberg
Area: Natural Sciences.

Computer Science
EN.601.448. Computational Genomics: Data Analysis. 3.0 Credits.
Genomic data has the potential to reveal causes of disease, novel drug
targets, and relationships among genes and pathways in our cells.
However, identifying meaningful patterns from high-dimensional genomic
data has required development of new computational tools. This course
will cover current approaches in computational analysis of genomic data
with a focus on statistical methods and machine learning. Topics
will include disease association, prediction tasks, clustering and
dimensionality reduction, data integration, and network reconstruction.
There will be some programming and a project component. [Applications]
Prerequisites: EN.601.226 or other programming experience, probability
and statistics, linear algebra or calculus.
Prerequisites: Students must receive credit for EN.600.438 or EN.600.638,
but not both.
Instructor(s): A. Battle
Area: Engineering.

3.0 Credits.
The goal of this course is to study the leading computational and
quantitative approaches for comparing and analyzing genomes starting
from raw sequencing data. The course will focus on human genomics
and human medical applications, but the techniques will be broadly
applicable across the tree of life. The topics will include genome
assembly & comparative genomics, variant identification & analysis, gene
expression & regulation, personal genome analysis, and cancer genomics.
The grading will be based on assignments, a midterm & final exam, class
presentations, and a significant class project. [Applications] Expected
course background: familiarity with UNIX scripting and/or programming.
Instructor(s): M. Schatz.

Biophysics
http://biophysics.jhu.edu/
The Department of Biophysics offers programs leading to the B.A., M.A.,
and Ph.D. degrees. Biophysics is appropriate for students who wish
to develop and integrate their interests in the physical and biological
sciences.

Research interests in the Department cover experimental and
computational, molecular and cellular structure, function, and biology,
membrane biology, and biomolecular energetics. The teaching and
research activities of the faculty bring its students in contact with
biophysical scientists throughout the university. Regardless of their choice
of research area, students are exposed to a wide range of problems of
biological interest. For more information, and for the most up-to-date list
of course offerings and requirements, consult the department web page at
biophysics.jhu.edu.

Research Activities of Primary Faculty
Protein Engineering and Biophysics (Dr. Garcia-Moreno)
To understand how biological macromolecules work, or to design and
engineer new ones, it is necessary to understand in detail the relationship
between structure and energetics. We study this problem in our lab
by analysis of the connection between structure, thermodynamic
stability, and dynamics of proteins with a combination of computational
and experimental methods. The approach depends heavily on the
application of NMR spectroscopy, X-ray crystallography, and equilibrium
thermodynamics. The experiments contribute the physical insight needed
guiding the development of computational methods for structure-based
energy calculations, as well as the data required to benchmark these
methods. We are focused on problems of protein electrostatics because
electrostatic energy is the most useful metric for correlating structure
with function in all the most important energy transduction processes
in biological systems. We focus on the engineering of proteins with pH
sensing

Biophysics of RNA (Dr. Woodson)
The control of cell growth and type depends on the ability of RNA to
fold into complex three-dimensional structures. RNA catalysts are good
models for studying the physical principles of RNA folding, and the
assembly of protein-RNA complexes such as the ribosome. Changes
in RNA three-dimensional structure are monitored by fluorescence
spectroscopy, “X-ray footprinting,” and neutron scattering. Bacterial and
yeast expression systems are used to study intracellular folding of RNA.

Protein Folding, Notch Signaling (Dr. Barrick)
The folding of proteins into their complex native structures is critical
for proper function in biological systems. This spontaneous process
of self-assembly is directed by physical chemistry, although the rules are not understood. We are using repeat-proteins, linear proteins with simple architectures, to dissect the energy distribution, sequence-stability relationship, and kinetic routes for folding. In addition, we are studying the molecular mechanisms of Notch signaling, a eukaryotic transmembrane signal transduction pathway. The transmission of information across the membranes of cells is essential for cell differentiation and homeostasis; signaling errors result in disease states including cancer. We are focusing on interactions between proteins involved in Notch signaling using modern biophysical methods. Thermodynamics of association and allosteric effects are determined by spectroscopic, ultracentrifugation, and calorimetric methods. Atomic structure information is being obtained by NMR spectroscopy. The ultimate goal is to determine the thermodynamic partition function for a signal transduction system and interpret it in terms of atomic structure.

NMR Spectroscopy (Dr. Lecomte)
Many proteins require stable association with an organic compound for proper functioning. One example of such “cofactor” is the heme group, a versatile iron-containing molecule capable of catalyzing a broad range of chemical reactions. The reactivity of the heme group is precisely controlled by interactions with contacting amino acids. Structural fluctuations within the protein are also essential to the fine-tuning of the chemistry. We are studying how the primary structure of cytochromes and hemoglobins codes for heme binding and the motions that facilitate function. The method of choice is nuclear magnetic resonance spectroscopy, which we use to obtain detailed structural and dynamic representations of proteins with and without bound heme. The ultimate goal is to understand the evolution of chemical properties in heme proteins and how to alter them.

Structural and Energetic Principles of Membrane Proteins (Dr. K. Fleming)
Membrane proteins must fold to unique native conformations and must interact in specific ways to form complexes essential for life. Currently, the chemical principles underlying these processes are poorly understood. Thermodynamic and kinetic studies on membrane proteins with diverse folds and oligomeric states are carried out with the goal of discovering the physical basis of stability and specificity for membrane proteins. Our research results in a quantitative understanding of sequence-structure-function relationships that can ultimately be used to describe membrane protein populations in both normal and disease states, to design novel membrane proteins, and to develop therapeutics that modulate membrane protein functions in desirable ways.

Chromatin Remodeling (Dr. Bowman)
Chromatin, the physical packaging of eukaryotic chromosomes, plays a major role in determining the patterns of gene silencing and expression across the genome. Chromatin remodelers are multicomponent protein machines that establish and maintain various chromatin environments through the assembly, movement, and eviction of nucleosomes. At present, the molecular mechanisms by which chromatin remodelers alter chromatin structure are not understood. Our long-term goal is to gain a molecular understanding of the remodeling process and in particular how remodeling is coupled to the transcriptional machinery. Our strategy is to couple structure determination with functional studies to determine how different components of a chromatin remodeler cooperate and interact with the nucleosome substrate.

Physical Systems Biology (Dr. Roberts)
The laboratory is devoted to understanding and modeling the behavior of cells as complex systems. We are using tools from the general area of biological physics: potential- and probability-based computational modeling along with limited applications of single-cell, single-molecule experimental techniques (split roughly 80% theoretical/computational and 20% experimental). We term this approach “Physical Systems Biology” and it lies at the interface of biology, computer science, and physics. While this approach absolutely requires in-depth characterization of particular components, an equally critical step is then stepping back to consolidate the knowledge gained into a model of the entire cellular system. Incorporating many varied types of biological data into a genuine in silico model for the cell is the long-range goal of the laboratory.

Theoretical Biophysics (Dr. Johnson)
Protein interaction networks capture the cooperation required by proteins to carry out complex functions in the cell. The ability of proteins to assemble to form transient or permanent complexes and transmit signals or nutrients depends on their concentrations, their binding partners, and their spatial and temporal dynamics in the cell. Using computation and theory, we are building models to accurately simulate these multi-protein assembly processes, such as those occurring in endocytosis, that are critical to cell survival. We complement these detailed simulations with coarse-grained models to extend to larger protein interaction networks and characterize the role of network topology on protein binding specificity and dynamics.

Single Molecule Biophysics (Dr. Ha)
Our research is focused on pushing the limits of single-molecule detection methods to study complex biological systems. We develop state-of-the-art biophysical techniques (e.g., multicolor fluorescence, super-resolution imaging, combined force and fluorescence spectroscopy, vesicular encapsulation, single-molecule pull-down) and apply them to study diverse protein–nucleic acid and protein-protein complexes, and mechanical perturbation and response of these systems both in vitro and in vivo.

Quantitative analysis of gene expression in single molecule and single cell (Dr. Myong)
Our research is focused on dissecting biological pathways that control and modulate gene expression profiles that are pertinent to human diseases. We develop single molecule and single cell platforms to examine potential rate-limiting steps that contribute to modulating transcription and translation. In particular, we investigate RNA interference pathway and G-quadruplex DNA mediated promoter activity. In collaboration, we are also studying telomeric DNA processing and chromatin remodeling. Together, we seek to shed light on molecular orchestration and mechanism that govern the Central Dogma of Biology.

Cellular Physics (Dr. Camley)
I work on the physics of cell biology, trying to understand how cells can respond to signals, crawl through complex environments, and work together to move and measure signals. I am also interested in the dynamics of subcellular processes like the cell membrane’s motion and intracellular transport. These problems link the physics of soft, fluctuating materials to biological questions like how a white blood cell can find a wound. My group uses a wide range of computational and analytical methods to model organelles, cells, and tissues, ranging from stochastic hydrodynamics to phase field and reaction-diffusion modeling.

Facilities
The department shares state-of-the-art equipment for X-ray diffraction analysis, NMR spectroscopy, solution biophysical studies, and numerically intensive computer simulations with other biophysics units and departments within the University. In addition, the Department
houses a full complement of equipment for molecular biological and biochemical work, and for various kinds of spectroscopy.

**Undergraduate Program**

The undergraduate major in biophysics is intended for the student interested in advanced study of biophysics or the related fields of biochemistry, quantitative or computational biology, molecular biology, physiology, pharmacology, and neurobiology. The biophysics major fulfills all typical science premedical requirements with the exception of Organic Chemistry Lab (AS.030.225 Introductory Organic Chemistry Laboratory or AS.030.227 Chemical Chirality: An Introduction in Organic Chem. Lab. Techniques). The student majoring in biophysics, with the advice of a member of the department, chooses a program of study that will include foundation courses in biology, chemistry, and physics followed by advanced studies in biophysics, and independent research. The biophysics major requires that students earn a grade of “C” or greater for all courses required in the major. A student who earns a grade of "C-" or below must repeat the course and earn a better grade.

For additional information on academic requirements and department events for majors, check the undergraduate website (http://biophysics.jhu.edu/undergraduate).

**Requirements for the B.A. Degree**

(See also Requirements for a Bachelor’s Degree (p. 7).)

**Major requirements are:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>&amp; AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.030.103</td>
<td>Applied Chemical Equilibrium and Reactivity w/lab</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.030.205</td>
<td>Introductory Organic Chemistry I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.030.206</td>
<td>Organic Chemistry II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.030.212</td>
<td>Honors Organic Chemistry II with Applications in Biological and Materials Chemistry</td>
<td>4</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.103</td>
<td>General Physics I for Biological Science Majors</td>
<td>4</td>
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</tr>
<tr>
<td>or AS.171.105</td>
<td>General Physics I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td>4</td>
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</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.171.104</td>
<td>General Physics/Biology Majors II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.171.106</td>
<td>Electricity and Magnetism</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.173.116</td>
<td>Electricity and Magnetism Laboratory</td>
<td>4</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

One additional Math elective is required. See "Math List" below.

**Math List** *(Select one from this list as required Math Elective)*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.201</td>
<td>Linear Algebra</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.110.212</td>
<td>Honors Linear Algebra</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EN.553.211</td>
<td>Probability and Statistics for the Life Sciences</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or EN.553.311</td>
<td>Probability and Statistics for the Biological Sciences and Engineering</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or EN.553.310</td>
<td>Probability &amp; Statistics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
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</tbody>
</table>

Any 300 level course or higher with approval of faculty advisor.

**List #1 (Select 3 from this list as Major Electives)**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.250.253</td>
<td>Protein Engineering and Biochemistry Lab</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>or AS.250.254</td>
<td>Protein Biochemistry and Engineering Laboratory</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>AS.250.316</td>
<td>Biochemistry II</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>AS.171.201</td>
<td>Special Relativity/Waves</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.171.309</td>
<td>Wave Phenomena with Biophysical Application</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.171.202</td>
<td>Modern Physics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or AS.171.310</td>
<td>Biological Physics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EN.601.107</td>
<td>Introductory Programming in Java (*)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or EN.601.220</td>
<td>Intermediate Programming</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EN.601.226</td>
<td>Data Structures (*)</td>
<td>4</td>
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</table>

*Upper level computer science or bio-computing course can replace these courses with approval from advisor.

**List #2 (Select 3 from this list as Major Electives)**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.250.253</td>
<td>Protein Engineering and Biochemistry Lab</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>or AS.250.254</td>
<td>Protein Biochemistry and Engineering Laboratory</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>AS.250.265</td>
<td>Introduction to Bioinformatics</td>
<td>3</td>
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</tbody>
</table>
AS.250.302  Modeling the Living Cell 4  
AS.250.313  Molecular and Cellular System Biology 4  
AS.250.316  Biochemistry II 3  
AS.250.320  Macromolecular Binding 3  
AS.250.353  Computational Biology 3  
AS.250.403  Bioenergetics: Origins, Evolution and Logic of Living Systems 3  
AS.171.201  Special Relativity/Waves 4  
or AS.171.309  Wave Phenomena with Biophysical Application 4  
AS.171.202  Modern Physics 4  
or AS.171.310  Biological Physics 4  
Any course 300-level or higher in Biology, Chemistry, Math, or Physics that is 3 credits or more.

Advanced Seminar List (Select one from this list as Advanced Seminar Requirement)  
AS.250.335  Single Molecule & Cell Biophysics 3  
AS.250.401  Advanced Seminar in Structural and Physical Virology 3  
AS.250.403  Bioenergetics: Origins, Evolution and Logic of Living Systems 3  
AS.250.411  Advanced Seminar in Structural Biology of Chromatin 3  
AS.250.421  Advanced Seminar in Membrane Protein Structure, Function & Pharmacology 3

Scheduling conflicts occasionally arise due to schedule changes in the departments of Physics, Biology, and Chemistry. Prospective biophysics majors should consult with the departmental undergraduate advisor to determine how the conflicts can be resolved.

Sample Programs for the B.A. in Biophysics

First Year  
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.030.101  Introductory Chemistry I</td>
<td>3</td>
<td>AS.030.102  Introductory Chemistry II</td>
<td>3</td>
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<tr>
<td>AS.030.105  Introductory Chemistry Laboratory I</td>
<td>1</td>
<td>AS.030.106  Introductory Chemistry Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>AS.110.108  Calculus I</td>
<td>4</td>
<td>AS.110.109  Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.250.205  Introduction to Computing</td>
<td>3</td>
<td>AS.250.131  Freshman Seminar in Biophysics (optional)</td>
<td>1</td>
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</table>

Second Year  
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.030.205  Introductory Organic Chemistry I</td>
<td>4</td>
<td>AS.030.206  Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202  Calculus III</td>
<td>4</td>
<td>AS.171.104  General Physics/Biology Majors II</td>
<td>4</td>
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</table>

<p>| Third Year  |</p>
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.250.253  Protein Engineering and Biochemistry Lab</td>
<td>3</td>
<td>AS.250.381  Spectroscopy and Its Application in Biophysical Reactions</td>
<td>3</td>
</tr>
<tr>
<td>AS.250.315  Biochemistry I</td>
<td>4</td>
<td>AS.250.522  Research Problems</td>
<td>3</td>
</tr>
<tr>
<td>AS.250.372  Biophysical Chemistry</td>
<td>4</td>
<td>Elective from List #1</td>
<td>3-4</td>
</tr>
<tr>
<td>AS.250.521  Research Problems</td>
<td>3</td>
<td>Elective from List #2</td>
<td>3-4</td>
</tr>
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</table>

<p>| Fourth Year  |</p>
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.250.521  Research Problems (optional)</td>
<td>3</td>
<td>AS.250.383  Molecular Biophysics Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>Elective from List #1</td>
<td>3-4</td>
<td>Elective from List #1</td>
<td>3-4</td>
</tr>
<tr>
<td>Elective from List #2</td>
<td>3-4</td>
<td>Elective from List #2</td>
<td>3-4</td>
</tr>
<tr>
<td>Required Advanced Seminar Course</td>
<td>3</td>
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</table>

Total Credits: 93-99

A Note on Writing Courses  
The Krieger School of Arts & Sciences requires 12 credits of writing-intensive coursework. Although many humanities and social science courses have a writing designation, a few courses within the major also fulfill the requirement. Current examples include:

- AS.250.335  Single Molecule & Cell Biophysics  
- AS.250.383  Molecular Biophysics Laboratory  
- AS.250.401  Advanced Seminar in Structural and Physical Virology  
- AS.250.403  Bioenergetics: Origins, Evolution and Logic of Living Systems  
- AS.250.411  Advanced Seminar in Structural Biology of Chromatin  
- AS.250.421  Advanced Seminar in Membrane Protein Structure, Function & Pharmacology

Fulfilling some of the writing requirement with one or more biophysics courses requires advanced planning because not all of these courses are offered every year.

Honors in Biophysics  
The Jenkins Biophysics department offers outstanding students the opportunity to earn departmental honors in Biophysics. This honors distinction appears on the student's transcript upon graduation. If
the honors requirements are approved prior to early April, an “Honors” distinction will additionally appear in the commencement program.

The requirements for departmental honors in biophysics are two-fold:

The student must maintain an overall GPA of 3.5 or greater.
The student must write and receive approval of an Honors paper that is based on their 6 credits of required research.

Generally, the Honors paper must be submitted no later than March 1 of the senior year to meet the commencement deadline. Details on the format of the Honors paper can be found on the departmental website. Schedule a meeting with your Jenkins faculty adviser if you are interested in seeking departmental honors.

Ete Z. Szüts Undergraduate Research Travel Award
This award, named in honor of a Ph.D graduate student from this department, will provide funds for up to 80 percent of the transportation costs of undergraduate research students in biophysics to attend a scholarly meeting. Recipients must be sponsored by a member of the departmental faculty who will be at the same meeting. Schedule a meeting with your Jenkins faculty adviser if you are interested in the Szuts Travel Award.

H. Keffer Hartline Award for Excellence in Undergraduate Research in Biophysics
This award honors a senior Biophysics Major for excellence in undergraduate research in Biophysics. Recipients are selected by Biophysics Faculty.

Detlev W. Bronk Award for Outstanding Scholarship in Biophysics
This award honors a senior Biophysics major for outstanding academic achievement in Biophysics. Recipients are selected by Biophysics Faculty.

Graduate Programs

Fifth-Year Master’s Degree
The T. C. Jenkins Department of Biophysics offers outstanding undergraduate biophysics majors the opportunity to advance their education through a combined, 5-year B.A., M.A. program. Candidates for this program must be current biophysics undergraduates with a departmental GPA of 3.5 or greater and a strong research history. All bachelor’s requirements must be completed before matriculating into the Master’s program.

Students in this program will be required to take courses such as:

<table>
<thead>
<tr>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.250.685</td>
<td>Proteins &amp; Nucleic Acids</td>
<td>3</td>
</tr>
<tr>
<td>AS.250.689</td>
<td>Physical Chemistry of Biological Macromolecules</td>
<td>3</td>
</tr>
<tr>
<td>AS.250.690</td>
<td>Methods in Molecular Biophysics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 9

These courses account for about half of the student’s time. The remaining effort is spent on a substantial research project. A Master’s thesis describing the research being carried out is also required.

Doctoral Programs
The Thomas C. Jenkins Department of Biophysics offers three Ph.D. programs (Jenkins, PMB and CMDB, see below). The annual application deadline is January 15.

Jenkins Biophysics Program
The Jenkins Biophysics Program is designed for students interested in obtaining a doctorate in biophysics. Students joining this program carry out their doctoral research with a faculty member in the Department of Biophysics (http://biophysics.jhu.edu/people). This program is financially supported through departmental funds, and therefore can support international students who are ineligible for NIH training grants.

Admission
Please see the Biophysics website (http://biophysics.jhu.edu/graduate/jenkins-biophysics-program/admissions) for requirements and how to apply to the Jenkins program.

Requirements for the Ph.D.
The following courses are required:

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<tr>
<td>AS.250.622</td>
<td>Statistics and Data Analysis</td>
</tr>
<tr>
<td>AS.250.623</td>
<td>Molecular Dynamics</td>
</tr>
<tr>
<td>AS.250.624</td>
<td>NMR Spectroscopy</td>
</tr>
<tr>
<td>AS.250.625</td>
<td>Single Molecule Measurements</td>
</tr>
<tr>
<td>AS.250.649</td>
<td>Introduction to Computing in Biology</td>
</tr>
<tr>
<td>AS.250.685</td>
<td>Proteins &amp; Nucleic Acids</td>
</tr>
<tr>
<td>AS.250.689</td>
<td>Physical Chemistry of Biological Macromolecules</td>
</tr>
</tbody>
</table>

In addition to classes, students are required to attend seminars given by outside speakers invited by the Biophysics Department, given on a weekly basis. Meeting and hearing about the work of others provides an excellent opportunity to observe different styles of communicating science, learn about career paths of others, and of course find out what key scientific questions are being pursued in different fields.

Teaching is an important mission of the Department of Biophysics. Students in the Jenkins Biophysics Program are required to serve as teaching assistants (TAs) for four semesters, which lasts the first two years. The TAs provide essential help in running laboratory and computer-based undergraduate courses, and it is through these assistantships that graduate students can be given financial support necessary for tuition and stipends.

After being admitted to the program, students must pass a Graduate Board Oral (GBO) exam to continue their dissertation research at Johns Hopkins University. This exam is traditionally taken in the spring of the second year. The exam committee consists of five faculty members, and the student provides oral answers. While generally focused on biophysics, questions can also extend to topics in biology, chemistry, and physics. Students who feel they may lack a strong background in certain areas are encouraged to improve their knowledge by taking elective classes and self-study during the first two years.

Program in Molecular Biophysics
The Program in Molecular and Biophysics (PMB), which began in 1990, brings together Johns Hopkins faculty at the Homewood and Medical School campuses. Its goal is to prepare students to deal with interdisciplinary problems in molecular biophysics and structural biology. For more information, see PMB Web page at pmb.jhu.edu.
Admission

All applicants must have a B.S. or a B.A. degree. Applications from students in any branch of science are welcome; however, we are particularly eager to attract applicants with undergraduate majors in physics, chemistry, mathematics, or relevant areas of engineering. There are no required undergraduate courses. Instead, applications are examined for general strength of scientific background. The Graduate Record Examination, including a subject test, is required.

Please use the Johns Hopkins University online application, selecting biophysics under the School of Arts & Sciences. Supplementary materials (letters of recommendation, GRE scores, statement, etc.) should be sent directly to:

Program in Molecular Biophysics
Johns Hopkins University
101 Jenkins Hall
3400 N. Charles Street
Baltimore, MD 21218

Requirements for the Ph.D.

Programs are developed individually for each student, and due account is taken of previous training.

The following courses are required:

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<tr>
<td>AS.250.689</td>
<td>Physical Chemistry of Biological Macromolecules</td>
</tr>
<tr>
<td>AS.250.702</td>
<td>Biological Macromolecules</td>
</tr>
<tr>
<td>ME.100.705</td>
<td>Computer Modeling of Biological Macromolecules</td>
</tr>
<tr>
<td>ME.330.709</td>
<td>Organic Mechanisms in Biology</td>
</tr>
</tbody>
</table>

Students must demonstrate strength in the following four areas: biological sciences, chemistry, mathematics, and physics. Typically, incoming students already have strength in at least two of these areas from undergraduate training. Deficiencies will be remedied through additional course work or self-study. Students must pass a proficiency exam in biological sciences at the end of their first year. In the mathematics and physics areas, students will be required to have calculus through the study of several variables, and one year of calculus-based physics, respectively. In the chemistry area, students are required to have basic chemistry, organic chemistry, and physical chemistry. In biological sciences, students are required to have knowledge of biochemistry and cell and molecular biology.

Additional academic requirements include completion of three 12-week laboratory rotations, a one-hour seminar on a current topic of biophysical research, and passing the Graduate Board Oral Preliminary Examination, to be given near the end of the second year. Responsible Conduct of Research instruction is required throughout the duration of graduate studies.

Completion of an original investigation and presentation of a dissertation are required. The dissertation must be accepted by the program and be considered worthy of publication by the referees. Students must then pass an oral examination on their dissertation and related topics.

The Program in Cell, Molecular Developmental Biology and Biophysics

The Program in Cell, Molecular Developmental Biology and Biophysics (CMDB) gives students a strong background in modern biology and physical biochemistry. This combination prepares students to study complex biological phenomena using quantitative physical methods. The training faculty reside in the T. C. Jenkins Department of Biophysics, the Biology Department, and the Carnegie Institutions Department of Embryology, all located on the Johns Hopkins Homewood campus. Students take core graduate courses in cell, molecular, and developmental biology, and in biophysics, and complete four eight-week rotations their first year. Other requirements include the Graduate Board Oral Preliminary Examination, given before the end of the second year, and successful defense of the dissertation.

For more information about CMDB, please check its website (cmdb.jhu.edu). Interested applicants can apply online via the program website or by U. S. mail to:

Ms. Joan Miller (joan@jhu.edu)
Graduate Admissions Coordinator
CMDB Program
Department of Biology
Johns Hopkins University
3400 N. Charles Street
Baltimore, MD 21218
410-516-5502

Financial Aid

Two National Institutes of Health training grants currently provide stipend and tuition support: one is for students who enroll in PMB and the other is for those who enter CMDB. Students supported by these training grants must be U.S. citizens or permanent residents. In addition, several research assistantships funded by grants and contracts awarded to faculty by outside agencies may be available to qualified students. University fellowships providing remission of tuition are also available. Graduate students in biophysics are eligible for and encouraged to apply for various nationally administered fellowships, such as National Science Foundation fellowships. Information on these and other support mechanisms can be obtained through the fellowship advisor at the applicant’s college or from the National Research Council.

Attn: Fellowships
1000 Thomas Jefferson St.
Washington, D.C., 20007.

It is anticipated that financial support covering normal living costs and tuition will be made available to accepted students. Support for foreign students is extremely limited.

For current faculty and contact information go to http://biophysics.jhu.edu/people/

Faculty

Faculty

Doug Barrick
Thomas C. Jenkins Professor; energetic and structural basis of Notch signal transduction, protein energetics, repeat protein folding.

Gregory Bowman
Associate Professor: biophysical and biochemical characterization of chromatin-remodeling proteins; X-ray crystallography.
Brian Camley
Assistant Professor (Physics & Astronomy): theoretical and computational studies of single and collective cell motility; soft matter in cell biology

Richard Cone
Professor: mucosal protective mechanisms, contraception and prevention of sexually transmitted diseases, cellular and molecular mechanics.

Bertrand Garcia-Moreno E.
Professor (Chair): experimental and computational studies of protein energetics and electrostatics.

Karen G. Fleming
Professor: energetics and folding of membrane proteins.

Taekjip Ha
Bloomberg Professor: single molecule biophysics, Fluorescence imaging and spectroscopy, mechanobiology

Margaret Johnson
Assistant Professor: computational and theoretical studies of protein-protein interactions; protein assembly and dynamics.

Juliette T. J. Lecomte
Professor: structure and dynamics of proteins in solution; NMR spectroscopy.

Sua Myong
Associate Professor: quantitative analysis of gene expression in single molecule and single cell

Elijah Roberts
Assistant Professor: development and application of in-silico cell models.

George Rose
Krieger-Eisenhower Professor, Research Professor, Professor Emeritus: modeling and simulation of protein folding and protein structure.

Sarah A. Woodson
Thomas C. Jenkins Professor: folding and assembly of RNA and RNA-protein complexes.

Research/Teaching Faculty
Ana Damjanovic
Associate Research Scientist: computational studies of protein structure, dynamics and function.

Carolyn Fitch
Senior Lecturer: computational and experimental studies on protein structure, function, and energetics.

Patrick Fleming
Senior Lecturer: computational studies of protein folding, structure and solvation.

Maria Procopio
Lecturer: Computational and theoretical studies of low magnetic field effects in biology via the radical-pair mechanism, magnetic sensing in animals, quantum biology

Jaime Sorenson
Lecturer

Secondary Appointments, Biology
Ernesto Freire

Professor: biophysical chemistry, thermodynamics of macromolecular assemblies in membranes protein-lipid interactions, microcalorimetry.

Vincent J. Hilser
Professor: conformational fluctuations in function, disease, and evolution.

Christian Kaiser
Assistant Professor: Single-molecule biochemistry studies of the machines and processes in protein translation, translocation, and folding

Evangelos Moudrianakis
Professor: mechanisms of enzyme action, especially of chloroplast and mitochondrial coupling factors. Human chromosome structure and function, self-assembly of chromosomal components.

Robert Schleif
Professor: protein-DNA interactions and regulation of gene activity.

Secondary Appointments, Chemistry
Christopher Falzone
Teaching Professor: NMR spectroscopy of proteins.

Craig A. Townsend
Professor: organic and bioorganic chemistry, biosynthesis of natural products, stereochemical and mechanistic studies of enzyme action, application of spectroscopic techniques to the solutions of biological problems.

Secondary Appointments, Advanced Academic Programs
Alexandra Tan
Program Director, Advanced Academic Programs and Lecturer, Biophysics

Joint Appointments
P. C. Huang
Professor (Biochemistry and Molecular Biology): organization and regulation of stress inducible genes and their gene products.

Affiliations with the School of Medicine
L. Mario Amzel
Professor: X-ray diffraction studies of biological macromolecules; enzymes involved in oxidate reductions and phosphorylation; experimental and modeling studies of binding proteins.

James M. Berger
Professor: structural and mechanistic biochemistry of protein/nucleic acid machines and assemblies.

Dominique Frueh
Assistant Professor: NMR studies of protein dynamic modulations and conformations in active enzymatic systems.

Albert Lau
Assistant Professor: characterization of receptor-ligand interactions and macromolecular conformational transitions using computational and crystallographic approaches.

Jungsan Sohn
Assistant Professor: structure and function of biological stress sensors.

Herschel Wade
Assistant Professor: structural, functional, and energetic treatments of ligand-activated molecular switches.

Cynthia Wolberger
Professor: three-dimensional structure of protein-DNA complexes, X-ray crystallography.

Bin Wu
Assistant Professor: single molecule imaging, RNA biology, and gene expression

Jie Xiao
Assistant Professor: dynamics of molecular process at single molecule and single cell level.

Visiting Faculty
Krastan Blagoev
Adjunct Associate Research Scientist: Theoretical and experimental biological physics

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.250.106. Introduction to Biomedical Research and Careers I. 1.0 Credit.
Lecture Series designed for those curious about a career in life sciences, medicine and public health. A novel format combining presentation with didactic interviews gives a broad view of a range of research topics, experimental approaches and logistics, and practical applications as well as career paths. Emphasis is on the excitement of scientific explorations not an abundance of the technical facts and figures. Freshmen and non-science majors. Co-listed with AS.250.300 and AS.250.306.
Instructor(s): P. Huang
Area: Natural Sciences.

AS.250.131. Freshman Seminar in Biophysics. 1.0 Credit.
Introduction of contemporary biophysics research topics through presentations, discussion and hands-on exercise. Freshmen and sophomores only. S/U grading only.
Instructor(s): K. Fleming
Area: Natural Sciences.

AS.250.205. Introduction to Computing. 3.0 Credits.
This course is useful for many disciplines not only the life sciences. It will introduce students to basic computing concepts and tools useful in many applications. Students learn to work in the Unix environment, to write shells scripts, and to make use of powerful Unix commands (e.g grep, awk, and sed). They will learn to program using the Python programming language, graphing software, and a package for numerical and statistical computing, such as Mathematica or MATLAB. At the end of the semester students will complete a project coupling all components of the semester together. Brief lectures followed by extensive hands-on computer laboratories with examples from many disciplines. No prerequisites. Course offered every semester.
Prerequisites: You cannot take AS.250.205 if you have already taken AS.250.206.
Instructor(s): C. Fitch
Area: Natural Sciences.

AS.250.206. Introduction to Computing. 4.0 Credits.
This course is useful for many disciplines not only the life sciences. It will introduce students to basic computing concepts and tools useful in many applications. Students learn to work in the Unix environment, to write shells scripts, and to make use of powerful Unix commands (e.g grep, awk, and sed). They will learn to program using the Python programming language, graphing software, and a package for numerical and statistical computing, such as Mathematica or MATLAB. At the end of the semester students will complete a project coupling all components of the semester together. Brief lectures followed by extensive hands-on computer laboratories with examples from many disciplines. No prerequisites. Course offered every semester.
Prerequisites: You cannot take AS.250.206 if you have already taken AS.250.205.
Instructor(s): C. Fitch
Area: Natural Sciences.

AS.250.253. Protein Engineering and Biochemistry Lab. 3.0 Credits.
This laboratory examines the relationship between genes and proteins in the context of disease and evolution. It is a research project lab in which the structural and functional consequences of mutations are determined for a model protein. Students will learn basic protein science and standard biochemical techniques and methods in protein engineering. They will perform experiments in site-directed mutagenesis, protein purification, and structural, functional and physical characterization of proteins. No prerequisites. Courses offered in Fall and Spring semesters.
Prerequisites: You cannot take AS.250.253 if you have already taken AS.250.254.
Instructor(s): C. Fitch; J. Sorenson
Area: Natural Sciences.

AS.250.254. Protein Biochemistry and Engineering Laboratory. 4.0 Credits.
This laboratory examines the relationship between genes and proteins in the context of disease and evolution. It is a research project lab in which the structural and functional consequences of mutations are determined for a model protein. Students will learn basic protein science and standard biochemical techniques and methods in protein engineering. They will perform experiments in site-directed mutagenesis, protein purification, and structural, functional and physical characterization of proteins. No prerequisites. Courses offered in Fall and Spring semesters.
Prerequisites: You cannot take AS.250.254 if you have already taken AS.250.253.
Instructor(s): C. Fitch
Area: Natural Sciences.

AS.250.265. Introduction to Bioinformatics. 3.0 Credits.
Algorithms and databases for biological information. A mostly computer lab course covering basic programming; algorithms for comparison of sequence, protein structure and gene expression; protein structure prediction and an introduction to major databases. Students will complete a genomics database project and will prepare and discuss online presentations on topics related to the use of genomic information. No programming experience necessary. Preference to Biophysics majors.
Instructor(s): P. Fleming
Area: Natural Sciences.
AS.250.300. Introduction to Biomedical Research and Careers II. 1.0 Credit.
Lecture Series designed for those curious about a career in life sciences, medicine and public health. A novel format combining presentation with didactic interviews gives a broad view of a range of research topics, experimental approaches and logistics, and practical applications as well as career paths. Emphasis is on the excitement of scientific explorations not an abundance of the technical facts and figures. Freshmen and non-science majors. Co-listed with AS.250.106 and AS.250.306
Instructor(s): P. Huang
Area: Natural Sciences.

AS.250.301. Laboratory in Molecular Evolution: Using ancestral. 3.0 Credits.
The availability of genomic sequences from a vast number of species has enabled the reconstruction of ancestral proteins. In this course we will reconstruct the genes of ancestral proteins and study the physical properties of proteins coded for by “extinct” genes. To examine the evolutionary mechanisms whereby modern proteins obtained their remarkable physical and functional properties, we will focus on understanding how the physical properties of proteins evolved hand-in-hand with changing environmental conditions such as pH, temperature, pressure, ionic strength, oxidative stress, etc.
Instructor(s): A. Robinson.

AS.250.302. Modeling the Living Cell. 4.0 Credits.
Previously titled “Models and Algorithms in Biophysics.” Introduction to physical and mathematical models used to represent biophysical systems and phenomena. Students will learn algorithms for implementing models computationally and perform basic implementations. We will discuss the types of approximations made to develop useful models of complex biological systems, and the comparison of model predictions with experiment.
Instructor(s): M. Johnson
Area: Natural Sciences.

AS.250.306. Introduction to Biomedical Research and Careers III. 1.0 Credit.
Lecture Series designed for those curious about a career in life sciences, medicine and public health. A novel format combining presentation with didactic interviews gives a broad view of a range of research topics, experimental approaches and logistics, and practical applications as well as career paths. Emphasis is on the excitement of scientific explorations not an abundance of the technical facts and figures. Freshmen and non-science majors. Co-listed with AS.250.106 and AS.250.300
Instructor(s): P. Huang
Area: Natural Sciences.

AS.250.310. Exploring Protein Biophysics using Nuclear Magnetic Resonance (NMR) Spectroscopy. 3.0 Credits.
NMR is a spectroscopic technique which provides unique, atomic level insights into the inner workings of biomolecules in aqueous solution. A wide variety of biophysical properties can be studied by NMR. For example, we can use the technique to determine three dimensional structure of biological macromolecules such as proteins and nucleic acids, probe their dynamical properties in solution, study their interaction with other molecules and understand how physico-chemical properties (such electrostatics and redox chemistry) affects and modulates structure-function relationships. NMR exploits the exquisite sensitivity of magnetic properties of atomic nuclei to their local electronic (and therefore, chemical) environment. As a result, biophysical properties can be studied at atomic resolution. That is to say, we can deconstruct global properties of a molecule in terms of detailed, atomic level information. In addition, interactions between nuclei can be exploited to enhance the information content of NMR spectra via multi-dimensional (2D and 3D) spectroscopy. Since these properties can be studied in solution, NMR methods serve as an effective complement to X-Ray crystallography, which also provides detailed, atomic level information in the solid state. In this course, we will learn about the basics of NMR spectroscopy, acquire 1D and 2D NMR spectra and use various NMR experiments to characterize and probe biophysical properties of proteins at an atomic level. Juniors and Seniors Only.
Prerequisites: ((AS.030.101 AND AS.030.105) OR (AS.030.103 OR AS.030.204)) AND (AS.030.370 OR AS.250.372) AND (AS.020.305 OR AS.030.315 OR AS.250.315) AND AS.030.205 or permission of the instructor.
Instructor(s): A. Majumdar.

AS.250.313. Molecular and Cellular System Biology. 4.0 Credits.
This course covers the principles of biological networks, with an emphasis on computational analysis. Networks ranging from simple biochemical pathways to genome-scale metabolic, regulatory, and signaling networks will be studied. Topics include dynamic modeling of biochemical pathways, steady-state analysis of cellular metabolic networks, inference of gene regulatory networks using –omics data, and systems biology approaches to studying signal transduction. Recommended Course Background: Calculus (AS.110.106 and AS.110.107), Biochemistry (AS.250.315 or AS.020.305 or equivalent), Computational Biology (AS.250.353) or Introduction to Bioinformatics (AS.250.265) or prior exposure to programming.
Instructor(s): E. Roberts.

AS.250.314. Research in Protein Design and Evolution. 3.0 Credits.
Instructor(s): B. Garcia-Moreno; J. Lecomte
Writing Intensive.

AS.250.315. Biochemistry I. 4.0 Credits.
Foundation for advanced classes in Biophysics and other quantitative biological disciplines. Lecture and computer laboratory. This class is the first semester of a two semester course in biochemistry. Topics in Biochemistry I include chemical and physical properties of biomolecules and energetic principles of catabolic pathways. Computer labs include extensive use of molecular graphics and modelling of reaction kinetics and pathway flux. Co-listed with AS.030.315
Prerequisites: If you have completed AS.250.307 you may not register for AS.250.315.
Instructor(s): P. Fleming
Area: Natural Sciences.
AS.250.316. Biochemistry II. 3.0 Credits.
Biochemical anabolism, nucleic acid structure, molecular basis of transcription, translation and regulation, signal transduction with an emphasis on physical concepts and chemical mechanisms. Format will include lectures and class discussion of readings from the literature.
Prerequisites: (AS.250.315 OR AS.030.315 OR AS.020.305) AND (AS.030.206 OR AS.030.212) or permission of the instructor.
Instructor(s): S. Rokita; S. Woodson.

AS.250.320. Macromolecular Binding. 3.0 Credits.
All biological processes require the interactions of macromolecules with each other or with ligands that activate or inhibit their activities in a controlled manner. This course will discuss theoretical principles, logic, approaches and practical considerations used to study these binding processes from a quantitative perspective. Topics will include thermodynamics, single and multiple binding equilibria, linkage relationships, cooperativity, allostery, and macromolecular assembly. Some biophysical methods used in the study of binding reactions will be discussed. Computer simulation and analysis of binding curves will be used to analyze binding data, and binding schemes and examples from the scientific literature will be reviewed and discussed. Recommended Course Background: AS.250.372 Biophysical Chemistry
Prerequisites: AS.250.315 OR AS.020.305
Instructor(s): K. Fleming
Writing Intensive.

AS.250.335. Single Molecule & Cell Biophysics. 3.0 Credits.
This (elective) course offers an introduction to the field of single molecule and single cell biophysics to second and third year undergraduate students in biophysics. We will examine technologies such as single molecule fluorescence, force measurements and single cell fluorescence detections that enable high precision molecular visualizations in vitro and in cells. In addition, we will cover topics of genome engineering, cell mechanics and optogenetics toward the end of the semester. Each student is expected to read two articles assigned for each week and submit a written summary. All students will take turns presenting the assigned articles to class.
Instructor(s): S. Myong; T. Ha.

AS.250.345. Cellular and Molecular Physiology. 3.0 Credits.
How cells and molecules function as parts of whole organisms. Topics include speeds of diffusion, motor proteins, and animal motility; bacterial size, shape, and chemotaxis; sensory and neuronal mechanisms; osmosis; mucosal protective mechanisms; cellular and organismic circulation and respiration. Discussion section to be arranged 1 hour per week.
Instructor(s): R. Cone
Area: Natural Sciences.

AS.250.351. Reproductive Physiology. 2.0 Credits.
Focuses on reproductive physiology and biochemical and molecular regulation of the female and male reproductive tracts. Topics include the hypothalamus and pituitary, peptide and steroid hormone action, epididymis and male accessory sex organs, female reproductive tract, menstrual cycle, ovulation and gamete transport, fertilization and fertility enhancement, sexually transmitted diseases, and male and female contraceptive methods. Introductory lectures on each topic followed by research-oriented lectures and readings from current literature.
Instructor(s): B. Zirkin
Area: Natural Sciences.

AS.250.353. Computational Biology. 3.0 Credits.
This course introduces several computational approaches to the study of biological macromolecules. Students will learn to use computational tools to carry out and analyze molecular simulations and how to work in a UNIX networked environment. A major goal is to understand molecular systems as ensembles. No programming experience is required. A previous biochemistry course is strongly recommended.
Prerequisites: (AS.030.101 AND AS.030.102) or AS.030.103
Instructor(s): P. Fleming
Area: Natural Sciences.

AS.250.372. Biophysical Chemistry. 4.0 Credits.
Course covers classical and statistical thermodynamics, spanning from simple to complex systems. Major topics include the first and second law, gases, liquids, chemical mixtures and reactions, conformational transitions in peptides and proteins, ligand binding, and allostery. Methods for thermodynamic analysis will be discussed, including calorimetry and spectroscopy. Students will develop and apply different thermodynamic potentials, learn about different types of ensembles and partition functions. Students will learn to use Mathematica and will use it for data fitting and for statistical and mathematical analysis. Background: Calculus, Organic Chemistry, and Introductory Physics.
Instructor(s): D. Barrick
Area: Natural Sciences.

AS.250.381. Spectroscopy and Its Application in Biophysical Reactions. 3.0 Credits.
Continues Biophysical Chemistry (AS.250.372). Fundamentals of quantum mechanics underlying various spectroscopies (absorbance, circular dichroism, fluorescence, NMR); application to characterization of enzymes and nucleic acids.
Instructor(s): J. Lecomte
Area: Natural Sciences.

AS.250.383. Molecular Biophysics Laboratory. 3.0 Credits.
An advanced inquiry based laboratory course covering experimental biophysical techniques to introduce fundamental physical principles governing the structure/function relationship of biological macromolecules. Students will investigate a "model protein", staphylococcal nuclease, the "hydrogen atom" of biophysics. Using a vast library of variants, the effect of small changes in protein sequence will be explored. A variety of techniques will be used to probe the equilibrium thermodynamics and kinetic properties of this system; chromatography, spectroscopy (UV-Vis, fluorescence, circular dichroism, nuclear magnetic resonance), calorimetry, analytical centrifugation, X-ray crystallography, mass spectroscopy, and computational methods as needed for analysis. These methods coupled with perturbations to the molecular environment (ligands, co-solvents, and temperature) will help to elucidate protein function. Prerequisite: Introduction to Scientific Computing (250.205) or equivalent. Biophysical Chemistry (250.372 or 020.370) or equivalent. Course taught in Fall and Spring.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.; AS.250.372
Instructor(s): C. Fitch
Writing Intensive.
**AS.250.401. Advanced Seminar in Structural and Physical Virology. 3.0 Credits.**
Illustrated fundamental contributions from biophysics and quantitative and physico-chemical approaches to study of complex biological systems. Focus on the physical and structural basis of viral infectivity, emphasizing replication cycles and evolution and structural biology of human pathogens such as HIV and influenza. AS.250.372 - Introduction to Biophysical Chemistry useful. Recommended Course Background: AS.030.205 and (AS.020.305 or AS.250.307)
Instructor(s): B. Garcia-Moreno
Area: Natural Sciences
Writing Intensive.

**AS.250.403. Bioenergetics: Origins, Evolution and Logic of Living Systems. 3.0 Credits.**
The trait shared by all living systems is the capacity to perform energy transduction. This biophysics/biochemistry course examines the physico-chemical and structural basis of biological energy transduction. Emphasis is on understanding the molecular and cellular logic of the flow of energy in living systems. The course explores the connection between fundamental physical requirements for energy transduction and the organization, evolution and possibly even the origins of biological molecules, cells, and organisms. Implications for planet earth's energy balance and for the design of synthetic organisms and of artificial energy transducing machines will be discussed, time permitting. Recommended Course Background: One semester of Biochemistry. Recommended Course Background: One semester of Biochemistry
Instructor(s): B. Garcia-Moreno
Writing Intensive.

**AS.250.411. Advanced Seminar in Structural Biology of Chromatin. 3.0 Credits.**
Focus is on structural and physical aspects of DNA processes in cells, such as nucleosomal packaging, DNA helicases, RNA polymerase, and RNA inhibition machinery. Topics are meant to illustrate how the structural and chemical aspects of how proteins and nucleic acids are studied to understand current biological questions. Recommended Course Background: Biochemistry I (AS.250.315) and Biochemistry II (AS.250.316) or Biochemistry (AS.020.305) and Intro to Biophys Chem (AS.250.372)
Instructor(s): G. Bowman
Area: Natural Sciences
Writing Intensive.

**AS.250.421. Advanced Seminar in Membrane Protein Structure, Function & Pharmacology. 3.0 Credits.**
Topics are meant to illustrate the physical basis of membranes and membrane proteins towards understanding their functions and pharmacological importance including aspects of drug design as it relates to membranes. Contemporary issues in the field will be covered using primary literature articles, structural manipulations in pymol, and computational binding simulations. Recommended Course Background: AS.030.205, AS.250.307, and AS.250.372
Instructor(s): K. Fleming
Writing Intensive.

**AS.250.514. Research in Protein Design and Evolution. 3.0 Credits.**
Instructor(s): B. Garcia-Moreno; J. Lecomte
Writing Intensive.

**AS.250.519. Independent Study. 3.0 Credits.**
Instructor(s): K. Fleming; S. Myong
Writing Intensive.
Cells are actively-driven soft materials but also efficient sensors and information processors. This course will cover the physics of those cellular functions, from the mechanics of DNA to the sensing of chemical signals. Questions answered include: How does polymer physics limit how quickly chromosomes move? Why do cells use long, thin flagella to swim? What limits the accuracy of a cell's chemotaxis? Some experience with partial differential equations required. No biology knowledge beyond the high school level necessary. Some problem sets will require minimal programming.
Instructor(s): B. Garcia-Moreno.
Cross Listed Courses
Biology
AS.020.674. Graduate Biophysical Chemistry.
This course will provide an overview of protein and nucleic acid structure, fundamentals of thermodynamics and kinetics, ligand binding, folding and stability of macromolecules, and the principles of biophysical methods such as fluorescence spectroscopy, NMR, and X-ray crystallography. Biology PhD students only. Monday Discussion Session is optional. Recommended Course Background: AS.020.305, AS.020.306
Instructor(s): E. Freire; R. Schleif.
Physics Astronomy
Cells are actively-driven soft materials – but also efficient sensors and information processors. This course will cover the physics of those cellular functions, from the mechanics of DNA to the sensing of chemical signals. Questions answered include: How does polymer physics limit how quickly chromosomes move? Why do cells use long, thin flagella to swim? What limits the accuracy of a cell's chemotaxis? Some experience with partial differential equations required. No biology knowledge beyond the high school level necessary. Some problem sets will require minimal programming.
Instructor(s): B. Camley
Area: Natural Sciences.
Biomedical Engineering
EN.580.446. Physical Epigenetics. 3.0 Credits.
Epigenetics describes information heritable during cell division other than DNA sequence per se. Recent advances show the critical role of epigenetics in controlling gene expression, embryonic development, and common human diseases such as cancer. This course will introduce fundamental epigenetic principles with a focus on mechanisms, modeling, and physical principles, relationship to genetics, and application to understanding human disease mechanisms.
Recommended Course Background: EN.580.221 Molecules and Cells or equivalent (molecular and cell biology), college level calculus and calculus-based general physics.
Instructor(s): A. Feinberg; T. Ha
Area: Engineering, Natural Sciences.
Chemistry
https://chemistry.jhu.edu/
The Department of Chemistry, in conjunction with other departments of the university, offers a broad education and the opportunity to do research in chemistry and related fields. The great diversity of the field of chemistry, ranging between physics and biology, is reflected in the research interests of the faculty. Undergraduate chemistry majors usually go on to graduate study in chemistry, chemical engineering, biology, oceanography, geochemistry, biophysics, environmental sciences, or medicine, while others enter the chemical industry. The Ph.D. in chemistry leads to professional careers in colleges and universities, research institutes, industry, and government laboratories.

Facilities
The department is well-equipped with instrumentation, both shared and in individual faculty research laboratories, to perform modern chemical research. The Departmental Instrumentation Facility houses the following pieces of major instrumentation:
• Bruker Avance 400 MHz FT-NMR spectrometers (2), one located in the Instrumentation Facility in Remsen Hall and the other on the first floor of the new chemistry building.
• Bruker Avance 300 MHz FT-NMR spectrometer.
• Bruker Avance III 400 MHz FT-NMR spectrometer and Fourier 300 FT-NMR spectrometer with an automatic sample changer are located in the undergraduate teaching laboratory.
• VG70S magnetic sector mass spectrometer, with EI, and CI ionization.
• VG70SE magnetic sector mass spectrometer, with FAB ionization.
• Finnigan LCQ ion trap mass spectrometer with electrospray ionization (APCI available as an option).
• Finnigan LCQ Duo ion trap mass spectrometer with electrospray ionization (for inorganic and organometallic use).
• Finnigan LCQ Fleet ion trap Mass Spectrometer with ESI ionization and HPLC inlet.
• Bruker Autoflex III Maldi-ToF-ToF Mass spectrometer with Maldi ionization and collision cell.
• Shimadzu QP2010SE GC-MS with EI ionization.
• Waters Acquity / Xevo G2 UPLC-Q-ToF MS with ESI and APCI ionisation.
• Bruker EMX EPR spectrometer equipped with a liquid helium cryostat and variable temperature controller.
• Thermo Nicolet Nexus 670 FT-IR spectrophotometer with a Nicolet Golden Gate ATR accessory.
• Jasco P-1010 polarimeter.
• Xcalibur X-ray diffractometer with CCD area detector (located on the second floor of the new chemistry building).
• Protein Technologies Symphony Quartet Peptide Synthesizer.
• SuperNova X-ray diffractometer (dual hi-flux micro-focus Mo and Cu sources) with Atlas CCD area detector (located on the second floor of the new chemistry building).

NMR spectrometers suitable for studies of biological macromolecules are located in the Biomolecular NMR Center, located in an underground facility in front of the new chemistry building. The instruments include 500, 600, and 800 MHz FT-NMR spectrometers.

A variety of different mass spectral techniques are available in the expanding Mass Spectrometry Facility. High-resolution mass spectra of submitted samples are obtained on a service basis by a staff member using two magnetic sector instruments equipped with EI, CI, and FAB ionization methods. MALDI-TOF, GC/MS, and electrospray instruments are also available and operated by students and researchers following training by the facility staff.

The X-ray Diffractometer Facility is operated by a staff member. The instruments are suitable for detailed molecular-level structural characterization of new organic or inorganic compounds.

The department has an established in-house peptide synthesis facility. This facility is equipped with a four-channel peptide synthesizer from Protein Technologies, an Agilent HPLC equipped with both a diode array and a fluorescence detector, and a lyophilizer.

The department shares with the Physics and Astronomy Department the use of the Physical Sciences Machine Shop, located in the Bloomberg Center. Electronics construction and repair is handled by a staff member in the Departmental Instrumentation Facility.

### Undergraduate Program

Programs for undergraduate majors can be tailored to individual interests so that a major in chemistry is excellent preparation not only for further work in chemistry, but also for any field that rests on a chemical foundation. It is a good choice for a premedical student interested in medical research.

### Requirements for the B.A. Degree

(Also see Requirements for a Bachelor's Degree. (p. 7))

Majors must complete all courses required for the major for a letter grade and receive a grade of C- or higher. Requirements of the chemistry major are:

#### Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; AS.030.105</td>
<td>Introductory Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td></td>
</tr>
<tr>
<td>or AS.030.103</td>
<td>Applied Chemical Equilibrium and Reactivity w/lab</td>
<td></td>
</tr>
<tr>
<td>AS.030.204</td>
<td>Chemical Structure and Bonding w/Lab *</td>
<td>4</td>
</tr>
<tr>
<td>AS.030.205</td>
<td>Introductory Organic Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>AS.030.206</td>
<td>Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.030.212</td>
<td>Honors Organic Chemistry II with Applications in Biological and Materials Chemistry</td>
<td></td>
</tr>
<tr>
<td>AS.030.227</td>
<td>Chemical Chirality: An Introduction in Organic Chem. Lab, Techniques **</td>
<td>3</td>
</tr>
<tr>
<td>or AS.030.225</td>
<td>Introductory Organic Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>AS.030.228</td>
<td>Intermediate Organic Chemistry Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.301</td>
<td>Physical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.305</td>
<td>Physical Chemistry Instrumentation Laboratory I</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.302</td>
<td>Physical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.306</td>
<td>Physical Chemistry Instrumentation Laboratory II</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.356</td>
<td>Advanced Inorganic Lab</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Outside Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.101</td>
<td>General Physics/Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.103</td>
<td>General Physics I for Biological Science Majors</td>
<td></td>
</tr>
<tr>
<td>or AS.171.105</td>
<td>Classical Mechanics I</td>
<td></td>
</tr>
<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>or AS.173.115</td>
<td>Classical Mechanics Laboratory</td>
<td></td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.104</td>
<td>General Physics/Biology Majors II</td>
<td></td>
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<tr>
<td>or AS.171.106</td>
<td>Electricity and Magnetism I</td>
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<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
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<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
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<tr>
<td>or AS.173.116</td>
<td>Electricity and Magnetism Laboratory</td>
<td></td>
</tr>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.106</td>
<td>Calculus I (Biological and Social Sciences)</td>
<td></td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.107</td>
<td>Calculus II (For Biological and Social Science)</td>
<td></td>
</tr>
<tr>
<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
<td></td>
</tr>
</tbody>
</table>

#### Advanced Elective Courses
Three credits of advanced chemistry courses beyond AS.030.305-AS.030.306

Nine credits of advanced chemistry courses, or science electives at the 300-level or higher approved by a Department of Chemistry advisor, and/or mathematics beyond Calculus II

Total Credits

* Course must be completed before AS.030.356 and can be taken as early as Spring of the first year.

** Fall semester of AS.030.227 restricted to Chemistry majors.

*** None of the advanced course requirements may be fulfilled with research.

Lecture and laboratory courses should be taken in sequence. In particular, AS.030.228 Intermediate Organic Chemistry Laboratory must be taken before AS.030.356 Advanced Inorganic Lab.

To allow maximum flexibility in choosing electives, students should complete both physics and organic chemistry by the end of the sophomore year. AS.030.449 Chemistry of Inorganic Compounds or AS.030.204 Chemical Structure and Bonding w/Lab and AS.020.305 Biochemistry or AS.250.315 Biochemistry I are required for an American Chemical Society accredited degree.

Sample Program
A typical program might include the following sequence of courses:

Freshman
Fall Credits Spring Credits
AS.030.101 Introductory Chemistry I 3 AS.030.102 Introductory Chemistry II 3
AS.030.105 Introductory Chemistry Laboratory I 1 AS.030.106 Introductory Chemistry Laboratory II 1
AS.110.106 Calculus I (Biology and Social Sciences) 4 AS.110.107 Calculus II (For Biological and Social Science) 4

Sophomore
Fall Credits Spring Credits
AS.030.205 Introductory Organic Chemistry I 4 AS.030.206 Organic Chemistry II 4
AS.030.225 or 227 Introductory Organic Chemistry Laboratory 3 AS.030.228 Intermediate Organic Chemistry Laboratory 3
AS.171.101 or 103 General Physics: Physical Science Major I 4 AS.171.102 or 104 General Physics: Physical Science Major II 4
AS.173.111 General Physics Laboratory I 1 AS.173.112 General Physics Laboratory II 1

Junior
Fall Credits Spring Credits
AS.030.301 Physical Chemistry I 3 AS.030.204 Chemical Structure and Bonding w/Lab 4
AS.030.305 Physical Chemistry Instrumentation Laboratory I 3 AS.030.302 Physical Chemistry II 3
Science or math elective 3

Senior
Fall Credits Spring Credits
AS.030.356 Advanced Inorganic Lab 3 Upper level chemistry elective (optional) 3
Upper level chemistry elective 3 Science or math elective 3

Total Credits: 74

Honors in Chemistry
To recognize exceptional performance, both in formal course work and in research, chemistry majors can receive a degree with honors. Honors in Chemistry may be achieved by one of two paths. 1: A student with a GPA of 3.75 or higher in (N) and (Q) courses or 2: A student with a 3.5 GPA in (N) and (Q) courses and with at least 2 semesters of research with a Chemistry faculty member or an approved advisor. These students must write a summary of their research and fill out the Honors Clearance form and the GPA checksheet (see: http://www.advising.jhu.edu/honors.php). Turn in these forms to the Director of Undergraduate Studies.

Graduate Programs
Each student's background and interests determine the course of study. The normal program leads to the Ph.D. degree. A student is not usually accepted for a terminal M.A. degree.

Requirements for the M.A. and Ph.D. Degrees
Normally, the minimum course requirement for both the M.A. and the Ph.D. degrees is six one-semester graduate courses in chemistry and related sciences. Exceptionally well-prepared students may ask for a reduction of these requirements.

Requirements for the Ph.D. degree include a research dissertation worthy of publication, and a knowledge of chemistry and related material as demonstrated in an oral examination. Each student must teach for at least one year.

Requirements for the M.A. degree, in addition to completion of formal course work and research, include a satisfactory performance on an oral examination.

Financial Aid and Admissions
Fellowships, research appointments, and teaching assistantships are available for graduate students. There are no fixed admission
requirements. Undergraduate majors in chemistry, biology, earth sciences, mathematics, or physics may apply, as well as well-qualified individuals who will have received a B.A. degree.

For further information about graduate study in chemistry visit the Chemistry Department website at https://chemistry.jhu.edu/.

For current faculty and contact information go to http://chemistry.jhu.edu/people/

**Faculty**

**Chair**
David R. Yarkony
D. Mead Johnson Professor: theoretical chemistry—electronic structure theory, multi-configuration self-consistent-field methods, excited state chemistry, electronic energy transfer in chemical reactions, spin-forbidden processes, and electronically nonadiabatic processes.

Paul J. Dagdigian
Arthur D. Chambers Professor: experimental chemical physics—dynamics of gas-phase chemical reactions, collisional energy transfer, molecular electronic spectroscopy, laser-induced fluorescence and ionization.

D. Howard Fairbrother
Physical chemistry—the structure of chemically protective surfaces, chemistry of adhesives, environmental surface chemistry.

David Goldberg
Inorganic and bioinorganic chemistry—structure/function relationships in heme proteins, artificial enzyme design, biomimetic molybdenum and tungsten coordination compounds, redox active ligands, synthesis of tetrapyrrolic macrocycles (phthalo-cyanine and porphyrin-based systems) for small-molecule activation and materials applications.

Marc M. Greenberg
Vernon K. Krieble Professor: organic and bioorganic chemistry—application of chemical, biochemical, and biological techniques to studies on DNA damage and repair, independent generation and study of reactive intermediates, development and application of methods for modified oligonucleotide synthesis, design of mechanistically inspired enzyme inhibitors radiosensitizing agents, and sensors.

Rigoberto Hernandez
Gompf Family Professor: theoretical and computational chemistry—statistical mechanics of chemical systems; molecular dynamics in complex environments; nonequilibrium dynamics of polymers, proteins, surfaces, colloids; transition state theory of driven chemical reactions; adaptive steered molecular dynamics of proteins; sustainable nanotechnology.

Kenneth D. Karlin
Ira Remsen Professor: inorganic and bioinorganic chemistry—synthetically derived structural, spectroscopic and functional models for copper and iron proteins, copper-dioxygen reversible binding and metal-mediated substrate oxidation, O2-reduction with copper cluster compounds, porphyrin-iron and copper chemistry relevant to heme-copper oxidases, metal-catalyzed ester and amide hydrolysis, metal complex protein and DNA interactions.

Thomas Lectka
Jean and Norman Scowe Professor: organic chemistry—the design and synthesis of theoretically interesting nonnatural products with applications in bioorganic and physical organic chemistry, materials science and supramolecular chemistry, novel approaches to asymmetric catalysis, theoretical organic chemistry.

Tyrel McQueen
Solid state inorganic chemistry—electronically and magnetically active materials—condensed matter physics.

Steven Rokita
Organic and bioorganic chemistry, sequence and conformation specific reactions of nucleic acids; enzyme-mediated activation of substrates and coenzymes; aromatic substitution and quinone methide generation in bioorganic chemistry, biological dehalogenation.

Harris J. Silverstone
Theoretical chemistry—development of mathematical techniques for applying quantum mechanics to chemical problems, high-order perturbation theory, semiclassical methods, divergent expansions, photoionization, LoSurdo-Stark effect, magnetic resonance spectral simulation, hyperasymptotics.

John P. Toscano
Organic chemistry—organic chemistry, fundamental chemistry and biochemistry of nitroxyl (HNO) including the design of new precursors to HNO, new analytical tools for its detection, and the characterization of HNO-induced protein modifications-time-resolved IR spectroscopy of organic reactive intermediates.

John D. Tovar
Organic chemistry—organic electronics, conjugated and conducting polymers, electrochemistry, nanostructured materials, polymer chemistry bioinspired self—assembly, and supramolecular chemistry.

Craig A. Townsend
Alsoph H. Corwin Professor: organic and bioorganic chemistry—biosynthesis and chemistry of natural products, stereo-chemical and mechanistic studies of enzyme action, small molecule/DNA interactions, application of spectroscopic techniques to the solution of biological problems.

**Associate Professors**

Arthur Bragg
Experimental physical chemistry—chemical dynamics and charge/energy transfer in condensed-phase systems, ultrafast spectroscopy.

Joel R. Tolman
Biophysical chemistry—protein-protein interactions, protein dynamics and structure, NMR methodology.

**Assistant Professors**

E. Emmet Reid Professor: theoretical and computational chemistry—electronic structure theory for treating relativistic forbidden processes, and electronically nonadiabatic processes.

Stephen D. Fried
Assistant Professors

D. Mead Johnson Professor: theoretical chemistry—electronic structure theory for treating relativistic forbidden processes, and electronically nonadiabatic processes.
Biochemistry and biophysics—mechanisms of protein folding and assembly in vivo, design and evolution of protein-based materials

Thomas Kempa
Materials chemistry—solid-state materials chemistry and experimental physical chemistry.

Rebekka S. Klausen
Organic and materials chemistry—the design and synthesis of well-defined organosilicon and organic materials, electronic characterization of novel materials.

V. Sara Thoi
Inorganic chemistry—coordination chemistry, materials synthesis, electron and ion transport, photochemistry, and electrocatalysis.

Research and Teaching Professors
Jaime Combariza
Research Professor.

Christopher Falzone
Teaching Professor.

Jane Greco
Associate Teaching Professor.

Louise Pasternack
Teaching Professor.

Adjunct, Emeritus, and Joint Appointments
David E. Draper
Professor Emeritus.

David Gracias
Assistant Professor (Chemical and Biomolecular Engineering).

Howard E. Katz
Professor (Materials Science and Engineering).

Brown L. Murr
Professor Emeritus.

Alex Nickon
Vernon Krieble Professor Emeritus.

Douglas Poland
Professor Emeritus.

Lawrence M. Principe
Professor (joint appointment in History of Science and Technology).

Dean W. Robinson
Professor Emeritus.

Lecturers
Larissa D’Souza
Senior Lecturer.

Eric Hill
Lecturer.

Sunita Thyagarajan
Lecturer.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.030.101. Introductory Chemistry I. 3.0 Credits.
The fundamental principles of chemistry, including atomic and molecular structure, bonding, elementary thermodynamics, equilibrium and acids and bases, are introduced in this course. Can be taken with Introductory Chemistry Laboratory – I unless lab has been previously completed. Note: Students taking this course and the laboratory 030.105 may not take any other course in the summer sessions and should devote full time to these subjects. High school physics and calculus are strongly recommended as prerequisites. First and second terms must be taken in sequence. Students not enrolled in college (unless they are rising freshmen) may not take this course.
Instructor(s): D. Goldberg; S. Thyagarajan
Area: Natural Sciences.

AS.030.102. Introductory Chemistry II. 3.0 Credits.
Continuation of AS.030.101 emphasizing chemical kinetics, chemical bonding. Topics: energy levels and wave functions for particle-in-a-box and hydrogen atom and approximate wave functions for molecules including introduction to hybrid orbitals. Note: Appropriate adjusting caps should be used to ensure both sections are approximately the same size
Prerequisites: Students enrolled in AS.030.103 may not enroll in or receive credit for AS.030.102.;AS.030.101 OR AS.030.107
Instructor(s): J. Greco
Area: Natural Sciences.

AS.030.103. Applied Chemical Equilibrium and Reactivity w/lab. 4.0 Credits.
This course is designed for students who have scored a 4 or 5 on the AP Chemistry Exam or who have scored a 6 or 7 HL IB Chemistry Exam. This course will review an advanced introductory chemistry sequence in a single semester. Chemical equilibrium, reactivity and bonding will be covered. These topics will be explored through laboratory experiments and problem solving, and discussing these principles in the context of current research. For details on chemistry placement and exam credit policies, please see http://www.advising.jhu.edu/placement_chemistry.php Students who have previously enrolled in AS.030.101 or AS.030.105 may not earn credit for AS.030.103 and students enrolled in AS.030.103 may not enroll in or receive credit for AS.030.102/AS.030.106.
Instructor(s): T. Mcqueen
Area: Natural Sciences.

AS.030.105. Introductory Chemistry Laboratory I. 1.0 Credit.
Laboratory work includes quantitative analysis and the measurement of physical properties. Open only to those who are registered for or have successfully completed Introductory Chemistry 030.101.
Prerequisites: Students enrolled in AS.030.105 may not enroll in AS.030.115, AS.030.103, or AS.030.107.;Students must have completed or be enrolled in AS.030.101 OR EN.510.101 to register for AS.030.105.
Instructor(s): E. Hill; S. Thyagarajan
Area: Natural Sciences.

AS.030.106. Introductory Chemistry Laboratory II. 1.0 Credit.
Laboratory work includes some quantitative analysis and the measurement of physical properties. Open only to those who are registered for or have completed Introductory Chemistry II (AS.030.102). Permission required for pre-college students.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.;Students enrolled in AS.030.103 may not enroll in or receive credit for AS.030.106,AS.030.107 OR ( AS.030.105 AND ( AS.030.101 OR EN.510.101) )
Instructor(s): J. Greco
Area: Natural Sciences.
AS.030.107. Chemical Principles w/lab: An Integrated Studio Course. 4.0 Credits.
An introduction to the fundamental principles of chemistry. The main topics to be covered are fundamental chemical reactions, stoichiometry and the balancing of chemical equations, solutions, gas laws, chemical equilibrium, acids and bases, and elementary chemical thermodynamics. Laboratory experiments and laboratory techniques will be incorporated into the course. Course will be run in three 2 hour blocks per week some of which will be used for lab. This course is equivalent to AS.030.101 and AS.030.105.
Prerequisites: This course is equivalent to AS.030.101 and AS.030.105.; Students enrolled in AS.030.107 may not enroll in AS.030.101, AS.030.105, AS.030.115, or AS.030.103.
Instructor(s): J. Greco
Area: Natural Sciences.

AS.030.110. Mini-term: Introduction to Bioorganic Chemistry. 1.0 Credit.
Meets M-F June 22nd - July 2nd. This interdisciplinary course is an introductory-level class to relate biological phenomena with basic principles of chemistry. Organic chemistry or biochemistry in college is one of the most stressful classes to some students and sometimes they are pushed by assignments and tests during the entire semester without having a chance to enjoy fun side of chemistry. This course will introduce some basic concepts of chemistry and organic chemistry and applications of those concepts into biological systems, in more enjoyable way with a smaller group of students than regular courses. The course aims biology-majors to get a molecular view and chemistry-majors to have fun to find how their chemical knowledge can be used to explain biological process. Also other students will learn about both and have an idea what interdisciplinary science is.
Instructor(s): H. Chung
Area: Engineering, Natural Sciences.

AS.030.112. Chemistry with Problem Solving I.
This course is for students who have had moderate or limited exposure to the subject. Special emphasis is placed on scientific problem-solving skills. There are two discussion sections per week, including one devoted exclusively to interactive quantitative problem solving. A typical student may have taken a year of descriptive chemistry as a high school sophomore, but has not been exposed to the problem-solving mathematical approach used in university-level science courses. Taken concurrently with AS.030.101 and AS.030.102.
Prerequisites: AS.030.101 OR AS.030.102
Instructor(s): A. Gittens; R. Harris.

AS.030.113. Chemistry with Problem Solving II.
This course is for students who have had moderate or limited exposure to the subject. Special emphasis is placed on scientific problem-solving skills. There are two discussion sections per week, including one devoted exclusively to interactive quantitative problem solving. A typical student may have taken a year of descriptive chemistry as a high school sophomore, but has not been exposed to the problem-solving mathematical approach used in university-level science courses. Taken concurrently with AS.030.101 and AS.030.102.
Instructor(s): S. Thyagarajan.

AS.030.114. Freshman Seminar: The Making of a Chemist. 3.0 Credits.
Students will be introduced to professional culture and practice in academic and industrial chemical research laboratories. Through reading and analysis of a few series of seminal papers from the 1800’s to the present leading to Nobel Prizes in Chemistry or Physics, students will learn how scientific inquiry and writing has evolved over time. Through discussion and practice, students will learn how to communicate chemistry in social media, scientific publications, scientific talks, and public lectures.
Instructor(s): R. Hernandez
Area: Natural Sciences
Writing Intensive.

AS.030.117. Chemistry in Art and Archaeology. 3.0 Credits.
From tracing trading routes to dating artifacts, explore the central science, chemistry, as it relates to the study of antiquities. Gain a general overview of non-destructive and destructive techniques for studying artifacts. Gain practical knowledge on how to implement quantitative and qualitative instrumentation in a laboratory and museum setting including. Visit a working museum laboratory to discuss the unique joys and challenges of archaemetry. Study recent advances with primary source analytical chemistry material and assess practical future implementation of new techniques. Learn to tune communication style based upon an audience within and without your main discipline.
Instructor(s): M. Gallagher
Area: Natural Sciences.

AS.030.118. The Science of Color. 3.0 Credits.
This course is designed to introduce students to the fundamental physical and chemical origins of color and how we perceive them - from the vivid palette provided by the natural world to the brightly colored clothing we wear. Beginning with the basic principles of light and color, we will embark on an interdisciplinary investigation of color, including, but not limited to: color chemistry; color in biology; the physiology of the eye; how color affects human psychology; the history of color and light; and the use of color in art. Discover the physical and chemical explanations behind several noteworthy phenomena such as sunsets, color-blindness, rainbows, fireworks, chameleons and the Aurora Borealis.
Instructor(s): J. Young
Area: Natural Sciences.

AS.030.173. Powering Tomorrow: The Chemistry Behind Alternative Energy. 3.0 Credits.
One of the most important scientific challenges society faces today is supply of green and sustainable energy. This course will highlight the contributions of chemists in current and emerging technologies of alternative energy. A general overview of solar energy, biomass conversion, nuclear power and other approaches will be presented. The underlying chemical principles of these areas, such as water oxidation, carbon dioxide reduction and generation of liquid fuels will be examined. The current sources of energy used in today’s world and their impact on the environment will also be discussed. In class sessions, students will be expected to be actively involved in the discussion of lectures and assigned readings.
Prerequisites: Corequisite: AS.030.101 or AP 4 or 5.
Instructor(s): C. Rolle
Area: Natural Sciences.
AS.030.202. How Enzymes Work. 3.0 Credits.
This course will introduce core concepts in protein-catalyzed chemistry and is intended to provide a molecular level context for students interested in learning about biochemistry and bioengineering. Topics include protein structure, origins of enzyme catalysis, and types of enzyme reactions. These concepts will be expanded upon through a survey on the basic mechanisms of a selection of enzymes important to health, energy, and the environment. The emphasis will be on how enzymes perform chemical transformation, and their roles in medicinal and industrial applications.
Instructor(s): H. Mcqueen; V. Thoi
Area: Natural Sciences.

AS.030.204. Chemical Structure and Bonding w/Lab. 4.0 Credits.
An introduction to the synthesis, structure, and reactivity of inorganic compounds. Modern approaches to chemical bonding, including molecular orbital, ligand field, and crystal field theories, will be applied to understanding the physical and chemical properties of inorganic materials. Other topics to be discussed include magnetic properties, electronic spectra, magnetic resonance spectra, and reaction kinetics. The integrated laboratory will cover basic synthetic, measurement, and calculation methods of inorganic chemistry.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class, AS.030.102 OR AS.030.103 OR an AP score of 5
Instructor(s): T. Mcqueen; V. Thoi
Area: Natural Sciences
Writing Intensive.

AS.030.205. Introductory Organic Chemistry I. 4.0 Credits.
The fundamental chemistry of the compounds of carbon. Methods of structure determination and synthesis. The mechanisms of typical organic reactions and the relations between physical and chemical properties and structures.
Prerequisites: AS.030.102 OR AS.030.103 OR EN.510.101 OR AS.030.204
Instructor(s): C. Falzone; C. Townsend; M. Greenberg
Area: Natural Sciences.

AS.030.206. Organic Chemistry II. 4.0 Credits.
Continuation of AS.030.205 Organic Chemistry I with special emphasis on organic synthesis and related synthetic methods. Students may not simultaneously enroll for AS.030.212 and AS.030.206.
Prerequisites: Pre-req: AS.030.205
Corequisites: Students may not simultaneously enroll for AS.030.212 and AS.030.206.
Instructor(s): E. Hill
Area: Natural Sciences.

AS.030.207. Problem Solving Methodology in Organic Chemistry I. 2.0 Credits.
This course will focus on the skills and strategies often utilized for solving problems in organic chemistry. In a seminar-style format, we will focus on a variety of strategies and techniques that students are otherwise expected to discover independently. This optional course is designed to help students succeed in Organic Chemistry I. The course is graded on a pass/fail basis, and is designed to be fun (believe it or not). Students work together in groups to solve challenging problems, focusing on the strategies necessary to solve each problem. This course is not required in order to succeed in Organic Chemistry I, but students in the past have found it to be helpful in guiding their study efforts for Organic Chemistry I.
Corequisites: Co-req: AS.030.205
Instructor(s): C. Falzone
Area: Natural Sciences.

AS.030.208. Problem Solving Methodology in Organic Chemistry II. 2.0 Credits.
This course will focus on the skills and strategies often utilized for solving problems in organic chemistry. In a seminar-style format, we will focus on a variety of strategies and techniques that students are otherwise expected to discover independently. This optional course is designed to help students succeed in Organic Chemistry II. The course is graded on a pass/fail basis, and is designed to be fun (believe it or not). Students work together in groups to solve challenging problems, focusing on the strategies necessary to solve each problem. This course is not required in order to succeed in Organic Chemistry II, but students in the past have found it to be helpful in guiding their study efforts for Organic Chemistry II.
Corequisites: Co-req: AS.030.206
Instructor(s): E. Hill
Area: Natural Sciences.

AS.030.212. Honors Organic Chemistry II with Applications in Biological and Materials Chemistry. 4.0 Credits.
Second semester undergraduate organic chemistry from an advanced prospective with connections to modern biological and materials chemistry. The standard topics of second semester organic chemistry (e.g. reactivity of aromatic and carbonyl containing molecules) will be covered with an emphasis on reaction mechanism to facilitate learning about reactivity and enriched with modern examples. In addition, the important role that organic chemistry plays in modern biological (e.g. nucleic acids and proteins) and materials science (e.g. living polymerization and the use of organic chemistry to control macroscopic properties) will be covered. Students may not simultaneously enroll for AS.030.212 and AS.030.206. Prereq: Must receive a B or better in the first semester (AS.030.205).
Prerequisites: Must receive a B or better in the first semester (AS.030.205)
Instructor(s): M. Greenberg
Area: Natural Sciences.
AS.030.213. Metalloproteins and Their Role in Human Disease. 3.0 Credits.
Many metal ions are essential elements for human life and health. Non-redox metals serve as charge carriers and are important in osmotic balance as well as proper protein folding and structure. Redox active transition metals, such as iron and copper are important in electron transfer, oxygen transportation, respiration, and neurotransmitter homeostasis. This course is designed to introduce students to the important biological roles of metal-protein interactions and possible diseases that may occur from their malfunction
Prerequisites: Introductory Chemistry I II - AS.030.101 AND AS.030.102
Instructor(s): D. Quist.

AS.030.225. Introductory Organic Chemistry Laboratory. 3.0 Credits.
Laboratory work includes fundamental laboratory techniques and preparation of representative organic compounds. Open only to those who are registered for or have completed Introductory Organic Chemistry. Note: This one-semester course is offered each term. Introductory Organic Chemistry I/II requires one semester of the laboratory.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Corequisites: Students may not simultaneously enroll for AS.030.225 and AS.030.227
Instructor(s): J. Greco; L. D'Souza
Area: Natural Sciences.

AS.030.227. Chemical Chirality: An Introduction in Organic Chem. Lab, Techniques. 3.0 Credits.
This is a project lab designed for Chemistry Majors who are concurrently enrolled in AS.030.205. Techniques for the organic chemistry laboratory including methods of purification, isolation, synthesis, and analysis will be explored through a project focused on chemical chirality. Students may not simultaneously enroll for AS.030.225 and AS.030.227.
Prerequisites: AS.030.206 OR AS.030.212;AS.030.205
Corequisites: Students may not simultaneously enroll for AS.030.225 and AS.030.227.
Instructor(s): E. Hill
Area: Natural Sciences.

AS.030.228. Intermediate Organic Chemistry Laboratory. 3.0 Credits.
Lab skills already acquired in AS.030.225 will be further developed for synthesis, isolation, purification, and identification of organic compounds. Spectroscopic techniques, applications will be emphasized. Recommended Course Background: AS.030.225
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): E. Hill
Area: Natural Sciences.

AS.030.270. Metals & Their Impact on Industry, Drug Development & Society. 3.0 Credits.
This is a seminar-based course that is broken up into three modules. The beginning of the course will focus on a basic introduction to the periodic table, in particular the transition metals. After a basic knowledge is formed the first theme will focus on the use of metals in the medical field, for example as MRI imaging agents or heavy metal poisoning. The second portion of the course will move away from the body and focus on how metals have impacted society. For example, we will look at the influence of metals in cars, the production of plastics and household chemicals. The final section will focus on how metals have influenced world power such as the invention of the atomic bomb. This course is designed to provide an overall understand of how chemistry and metals influence our lives every day.
Instructor(s): E. Joslin
Area: Natural Sciences.

AS.030.301. Physical Chemistry I. 3.0 Credits.
The laws of thermodynamics, their statistical foundation, and their application to chemical phenomena. Students should have knowledge of general physics, general chemistry, and calculus (two semesters recommended). Freshmen by permission only.
Instructor(s): R. Hernandez
Area: Natural Sciences.

AS.030.302. Physical Chemistry II. 3.0 Credits.
Introduction to quantum mechanics, its application to simple problems for which classical mechanics fails. Topics: Harmonic oscillator, hydrogen atom, very approximate treatments of atoms and molecules, and theoretical basis for spectroscopy. Recommended Course Background: AS.030.301
Instructor(s): K. Bowen
Area: Natural Sciences.

AS.030.303. Magic Bullets: How Drugs Really Work. 1.0 Credit.
This course will be an overview of the basic science behind frequently administered drugs. Medicines such as antibiotics, antivirals, cancer drugs, painkillers, and cardiovascular drugs will be covered. The course will focus on how these molecules cause a desirable effect in the body. Those with minimal background in chemistry/biology are encouraged to enroll.
Instructor(s): D. Marous
Area: Natural Sciences.

AS.030.305. Physical Chemistry Instrumentation Laboratory I. 3.0 Credits.
This course is designed to illustrate the principles of physical chemistry and to introduce the student to techniques and instruments used in modern chemical research. Chemistry majors are expected to take this sequence of courses, rather than AS.030.307. Chemistry majors only
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): A. Bragg; D. Fairbrother
Area: Natural Sciences.
AS.030.306. Physical Chemistry Instrumentation Laboratory II. 3.0 Credits.
Designed to illustrate the principles of physical chemistry, introduce the
student to spectroscopic techniques and instruments used in modern
chemical research. Chemistry majors are expected to take this course
rather than 030.307.
Prerequisites: Students must have completed Lab Safety training prior
to registering for this class.; AS.030.301 OR AS.030.302; Prerequisite:
AS.030.305
Instructor(s): T. Kemp
Area: Natural Sciences.

AS.030.307. Experiments in Physical Chemistry for Engineers. 3.0 Credits.
This is a one-semester course which selects experiments that are
most relevant to chemical engineering. Chemical Engineering majors
only. Recommended Course Background: AS.030.301-AS.030.302 or
equivalent.
Prerequisites: Students must have completed Lab Safety training prior to
registering for this class.
Instructor(s): D. Fairbrother
Area: Natural Sciences.

AS.030.315. Biochemistry I. 4.0 Credits.
Foundation for advanced classes in Biophysics and other quantitative
biological disciplines. Lecture and computer laboratory. This class is
the first semester of a two semester course in biochemistry. Topics in
Biochemistry I include chemical and physical properties of biomolecules
and energetic principles of catabolic pathways. Computer labs include
extensive use of molecular graphics and modelling of reaction kinetics
and pathway flux. Co-listed with AS.250.315
Prerequisites: AS.030.206 OR AS.030.212
Instructor(s): P. Fleming
Area: Natural Sciences.

AS.030.316. Biochemistry II. 3.0 Credits.
Biochemical anabolism, nucleic acid structure, molecular basis of
transcription, translation and regulation, signal transduction with an
emphasis on physical concepts and chemical mechanisms. Format will
include lectures and class discussion of readings from the literature.
Prerequisites: AS.030.315 OR AS.250.315 OR AS.020.305
Instructor(s): S. Rokita; S. Woodson
Area: Natural Sciences.

Students gain a critical understanding of societal energy sources in
scientific, economic, and political contexts. Past, present, and future
energy sources are discussed in terms of their scope and limitations.
Emphasis on the fundamental details of each energy technology and
incisive evaluation of policy regarding energy consumption and its
environmental consequences. Topics include global warming and
climate change, fossil fuels, alternative energies, and energy security and
productivity.
Instructor(s): E. Brigham
Area: Natural Sciences.

AS.030.345. Chemical Applications of Group Theory. 3.0 Credits.
The theory of the representations of finite and continuous groups will be
applied to problems in chemistry.
Instructor(s): D. Yarkony
Area: Natural Sciences.

AS.030.356. Advanced Inorganic Lab. 3.0 Credits.
Laboratory designed to illustrate the principles and practice of inorganic
chemistry through the synthesis and characterization of transition
metal and organometallic compounds. Methods used include vacuum
and inert atmosphere techniques. Instrumental approaches and
modern spectroscopic techniques are applied to the characterization of
compounds generated. It is strongly recommended that students have
taken or are taking one of the following courses: AS.030.204, AS.030.442,
AS.030.449, or AS.030.472.
Prerequisites: AS.030.228
Instructor(s): E. Hill
Area: Natural Sciences.

AS.030.370. Biophysical Chemistry. 4.0 Credits.
Course provides working understanding of physical chemistry of the cell,
emphasizing problem solving. Topics include classical and statistical
thermodynamics, thermodynamics of proteins and nucleic acids,
protein folding, calorimetry, ligand binding thermodynamics, linkage,
cooperativity and anticooperativity, allosteric models, lattice statistics,
helix-coil transition, and polymer theory. When appropriate, students visit
the laboratory to set up data collection and learn to analyze the resulting
data computationally, using nonlinear least-squares methods.
Prerequisites: Prereqs: ( AS.171.101 OR AS.171.103 OR AS.171.107 )
AND ( AS.171.102 OR AS.171.104 OR AS.171.108 ) AND ( AS.030.103 OR
AS.030.102 ) AND ( AS.110.106 OR AS.110.108 ) AND ( AS.110.107 OR
AS.110.109 )
Instructor(s): D. Barrick
Area: Natural Sciences.

AS.030.371. Chemistry for Connoisseurs. 3.0 Credits.
This course will survey the structural and physical properties of
chemicals often considered as part of the “finer things in life” including
topical discussions of the chemistries of food, drink, art, cosmetics and
Clothing, among others. Despite the pretentious name, the general theme
of the course is to put chemical identities onto the things we interact
with on a daily basis but most likely take for granted at a molecular
level. Current event topics in consumer chemistry will also be covered
(melamine in milk, “shoe rubber” in bread, etc.). Students will have the
chance to research and present topics of interest, and there will be field
trips. Open to Freshmen and Sophomores ONLY.
Prerequisites: One semester of college-level organic chemistry
(AS.030.205 or equivalent).
Instructor(s): J. Tovar
Area: Natural Sciences.

AS.030.400. A Survey of Medicinally and Environmentally Important
Metallo-enzymes and their Mechanisms. 3.0 Credits.
Metallo-proteins are responsible for many physiological processes
ranging from DNA biosynthesis, to detoxification, to respiration. The
beginning of the course will review core concepts in protein chemistry
including protein structures and dynamics, principles of catalysis and
end enzyme kinetics, and tools to probe enzyme mechanisms. These
concepts will be expanded upon in the second half of the course through
focus on the molecular mechanisms of redox-active metallo-enzymes. A
survey of the structure and function relationships within these enzymes
will be offered with select examples of heme, iron, and copper-containing
proteins that are important to drug development, energy production, and
environmental sustainability.
Prerequisites: AS.030.206 OR AS.030.212
Instructor(s): H. Kuo
Area: Natural Sciences.
AS.030.402. Experimental Methods in Physical Chemistry. 3.0 Credits.
This course introduces the student to experimental methodologies used in gas phase physical chemistry. Topics to be covered include vacuum technology, charged particle optics, lasers, mass spectrometry, data acquisition, detectors, measurement of temperature and pressure, and design and fabrication of scientific apparatus. These topics will be tied together with examples of specific experimental studies.
Instructor(s): K. Bowen
Area: Natural Sciences.

AS.030.403. Optoelectronic Materials and Devices: Synthesis, Spectroscopy, and Applications. 3.0 Credits.
This course provides an introduction to the vast chemistry and physics of solid-state materials. The course begins with a fundamental description of bonding in crystalline solids and calculation of electronic band structure. We then extend our discussion to methods for the synthesis of low-dimensional materials and hierarchical structures, including quantum dots (0D), nanowires (1D), graphene and graphene analogs (2D), and thin-film superlattices. An in-depth discussion of spectroscopic and characterization techniques for solid-state materials will follow and focus on some of the foundational studies of quantum devices and cooperative phenomena. At this stage we will describe recent advances in electron-microscopy (e.g. aberration-corrected and energy filtered TEM, atom-probe tomography) that are revolutionizing the structural, compositional, and electronic characterization of materials. The course will conclude with a survey of contemporary topics in solid-state and nanomaterials science, including functional devices and circuits, assembly, energy conversion and catalysis, and biological sensing. Recommended Course Background: AS.030.301 and AS.030.402 are preferred, but instructor approval may be granted in lieu of these courses.
Instructor(s): T. Kempa
Area: Natural Sciences.

AS.030.404. Electrochemical Systems for Energy Conversion and Storage. 3.0 Credits.
This course will be focused on the fundamentals and applications of electrochemical methods in catalysis, charge transport, and energy conversion and storage. Topics that will be covered are basic electrochemical techniques, homogenous and heterogeneous (photo)electrocatalysis, fuel cells, and charge storage devices. The class will conclude with a group report and presentation on a recent development in the field of energy catalysis, conversion, and storage. Course topics include: 1) Fundamentals of electrochemistry, 2) Potential sweep methods and current-controlled techniques, 3) Impedance analysis, 4) Electrochemistry coupled with other characterization methods, 5) Electrocatalysis and photoelectrochemical catalysis, 6) Basics in fuel cells and current technologies (alkaline, polymer exchange membrane, solid oxide...), 7) Basics in batteries and current technologies (Pb acid, Li-based, other metals...) Recommended Course Background: AS.030.204 or AS.030.449 or AS.030.472, or instructor approval for undergraduate students. No pre-requisites for graduate students
Instructor(s): V. Thoi
Area: Natural Sciences.

AS.030.405. Introduction to Computational Chemistry. 3.0 Credits.
This course provides an introduction to the state-of-the-art computational chemistry. The course integrates the basics about molecular electronic structure theories and the corresponding computational aspects and practice in chemical applications. The discussions of theories cover the modern quantum-chemical methods, ranging from mean-field methods (Hartree-Fock method and density-functional theory) to post mean-field methods for treating electron-correlation effects (configuration interaction and coupled cluster). Demonstrative calculations and computer lab practice are designed to deal with the computation of energetic properties (e.g., heat of formation, bond dissociation energy, reaction activation energy, etc) and structural properties (geometry, vibrational frequencies, etc) of representative molecular systems using standard quantum chemistry program package (the Gaussian program, most probably). The class will conclude with a report and presentation on a piece of recent computational work pertinent to the student’s research interests.
Instructor(s): L. Cheng.

AS.030.407. Modeling Matter at Nanoscales: An Introduction to Theoretical and Computational Approaches. 3.0 Credits.
The course allows students to become familiar with the essentials of concepts for modeling the structure of matter at nanoscales and the depending properties, as well as the way that they relate with measurements at human scales. Concepts on modeling, computer representation of nanosystems, origin of interactions between bodies at nanoscales and the different ways of finding the corresponding potential energy surfaces, including both classical and quantum mechanical procedures and described and even detailed when relevant. Applications can be on life materials, or other nanoscopic environments. It is designed for advanced undergraduate and graduate students in Chemistry, Physics, Biology, Pharmacy and Biochemistry, as well as physicians and engineers. Attendants must handle an essential ground in Mathematics, General Physics, Chemistry and related matters.
Instructor(s): L. Montero-Cabrera.

AS.030.420. Transforming Pharmaceutical and Materials Industries: Metal-Catalyzed Cross Coupling Reactions. 3.0 Credits.
Pharmaceutical and Material Industries have immensely benefited since the advent of metal-catalyzed cross-coupling bond forming methods. Most undergraduate organic chemistry courses do not emphasize the potential of these reactions. This course will discuss the synthesis of a variety of commercially available drugs and materials currently synthesized via transition metal-catalyzed cross-coupling methods.
Prerequisites: AS.030.205 AND AS.030.206
Instructor(s): S. Surampudi
Area: Natural Sciences.

AS.030.441. Spectroscopic Methods of Organic Structure Determination. 3.0 Credits.
The course provides fundamental theoretical background for and emphasizes practical application of ultraviolet/visible and infrared spectroscopy, proton and carbon-13 nuclear magnetic resonance and mass spectrometry to the structure proof of organic compounds.
Instructor(s): J. Tovar
Area: Natural Sciences.

AS.030.442. Organometallic Chemistry. 3.0 Credits.
An introduction to organometallic chemistry beginning with structure, bonding, and reactivity and continuing into applications to fine chemical synthesis and catalysis. Recommended Course Background: AS.030.449 or equivalent. Level: Upper level Undergraduate AND Graduate Students
Instructor(s): S. Thyagarajan
Area: Natural Sciences.
AS.030.446. Mathematica as a Tool for Chemists. 3.0 Credits.
A systematic, hands-on introduction to Mathematica. Covers Mathematica's basic "language," analytic and numerical calculations, data manipulation, graphical representation, interactivity, programming, and document production. Prerequisite: Calculus (including power series)
Instructor(s): H. Silverstone
Area: Natural Sciences.

AS.030.449. Chemistry of Inorganic Compounds. 3.0 Credits.
Physical and chemical properties of inorganic, coordination and organometallic compounds are discussed in terms of molecular orbital, ligand field and crystal field theories. Emphasis on structure and reactivity of these inorganic compounds. Other topics: magnetic properties, electronic spectra, magnetic resonance spectra, reaction kinetics.
Instructor(s): K. Karlin
Area: Natural Sciences.

AS.030.451. Spectroscopy. 3.0 Credits.
Spectroscopy and structure of molecules starting from rotational, vibrational and electronic spectra of diatomic molecules and extending to polyatomic molecules as time permits. Recommended Course Background: AS.030.302 or permission of instructor.
Instructor(s): L. Cheng; P. Dagdigian
Area: Natural Sciences.

AS.030.452. Materials & Surface. 3.0 Credits.
The chemistry associated with surfaces and interfaces as well as a molecular level understanding of their essential roles in many technological fields. The first half of this course addresses various analytical techniques used to study surfaces including X-ray, photoelectron spectroscopy, and scanning tunneling microscopy. The second half of this course uses a number of case studies to illustrate the application of surface analytical techniques in contemporary research.
Instructor(s): D. Fairbrother
Area: Natural Sciences.

AS.030.453. Intermediate Quantum Chemistry. 3.0 Credits.
The principles of quantum mechanics are developed and applied to chemical problems.
Prerequisites: (AS.030.301 OR AS.030.370 OR AS.250.372) AND AS.030.302
Instructor(s): L. Cheng
Area: Natural Sciences.

AS.030.472. Advanced Inorganic & Organometallic Reactions Mechanisms. 3.0 Credits.
The beginning of the course will focus on the basics of organometallic chemistry such as molecular orbital theory, agostic bonding, electronic structure and coordination geometries. These topics would then be followed with common reactions in organometallic chemistry such as ligand substitution, oxidation addition, and reductive elimination. The final set of topics will cover the basic "tools of the trade" which will encompass kinetics, dynamic NMR spectroscopy, kinetic isotope effects and mechanistic studies.
Prerequisites: Prerequisite: AS.030.206 OR AS.030.212
Instructor(s): E. Joslin
Area: Natural Sciences.

AS.030.501. Independent Research in Physical Chemistry I. 3.0 Credits.
Research under the direction of members of the physical chemistry faculty.
Instructor(s): D. Fairbrother; D. Yarkony; L. Cheng; R. Hernandez.

AS.030.502. Independent Research in Physical Chemistry. 0.0 - 3.0 Credits.
Research under the direction of members of the physical chemistry faculty.
Instructor(s): D. Fairbrother; K. Bowen; L. Cheng; R. Hernandez.

AS.030.503. Independent Research in Inorganic Chemistry I. 3.0 Credits.
Research under the direction of members of the inorganic chemistry faculty.
Instructor(s): D. Goldberg; J. Roth; K. Karlin; T. Lectka.

AS.030.504. Independent Research in Inorganic Chemistry. 0.0 - 3.0 Credits.
Research under the direction of members of the inorganic chemistry faculty.
Instructor(s): D. Goldberg; G. Meyer; J. Roth; K. Karlin; V. Thoi.

AS.030.505. Independent Research in Organic Chemistry I. 3.0 Credits.
Research under the direction of members of the organic chemistry faculty.
Instructor(s): Staff.

AS.030.506. Independent Research in Organic Chemistry I. 0.0 - 3.0 Credits.
Research under the direction of members of the organic chemistry faculty.
Instructor(s): Staff.

AS.030.507. Independent Research in Biochemistry. 3.0 Credits.
Research under the direction of members of the biochemistry faculty.
Instructor(s): Staff.

AS.030.509. Independent Research in Biochemistry II. 3.0 Credits.
Research under the direction of members of the biochemistry faculty.
Recommended Course Background: AS.030.507 - AS.030.508 and permission of instructor.
Instructor(s): C. Townsend; J. Tolman.

AS.030.510. Independent Research in Biochemistry II. 0.0 - 3.0 Credits.
Research under the direction of members of the biochemistry faculty.
Recommended Course Background: AS.030.507 - AS.030.508 and permission of instructor.
Instructor(s): C. Falzone; C. Townsend; J. Tolman.

AS.030.511. Independent Research in Materials Chemistry. 0.0 - 3.0 Credits.
Instructor(s): T. Mcqueen.

AS.030.512. Independent Research in Materials Chemistry. 0.0 - 3.0 Credits.
Research under the direction of the materials chemistry faculty.
Instructor(s): T. Mcqueen.

AS.030.521. Independent Research in Inorganic Chemistry II. 3.0 Credits.
Research under the direction of the inorganic chemistry faculty.
Recommended Course Background: AS.030.503 - AS.030.504 and permission of instructor.
Instructor(s): C. Falzone; D. Goldberg; J. Roth; K. Karlin.

AS.030.522. Independent Research in Inorganic Chemistry II. 0.0 - 3.0 Credits.
Research under the direction of the inorganic chemistry faculty.
Recommended Course Background: AS.030.503 - AS.030.504 and permission of instructor.
Instructor(s): D. Goldberg; G. Meyer; J. Roth.
AS.030.523. Independent Research in Physical Chemistry II. 3.0 Credits.
Research under the direction of the physical chemistry faculty. Recommended Course Background: AS.030.501-AS.030.502 and permission of instructor.
Instructor(s): D. Fairbrother; K. Bowen; L. Cheng; R. Hernandez.

AS.030.524. Independent Research in Physical Chemistry II. 0.0 - 3.0 Credits.
Research under the direction of the physical chemistry faculty. Recommended Course Background: AS.030.501-AS.030.502 and permission of instructor.
Instructor(s): D. Fairbrother.

AS.030.525. Independent Research in Organic Chemistry II. 3.0 Credits.
Research under the direction of the organic chemistry faculty. Recommended Course Background: AS.030.505-AS.030.506 and permission of instructor.
Instructor(s): J. Toscano; M. Greenberg; T. Lectka.

AS.030.526. Independent Research in Organic Chemistry II. 0.0 - 3.0 Credits.
Instructor(s): J. Toscano; M. Greenberg; T. Lectka.

AS.030.527. Independent Study. 3.0 Credits.
Instructor(s): D. Fairbrother.

AS.030.528. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): D. Fairbrother.

AS.030.530. Independent Research in Inorganic and Materials Chemistry. 1.0 - 3.0 Credits.
Research under the direction of members of the Inorganic Chemistry faculty.
Instructor(s): V. Thoi.

Research under the direction of members of the Physical Chemistry faculty.
Instructor(s): T. Kempa.

AS.030.551. Internship-Chemistry. 1.0 Credit.
Instructor(s): Staff.

AS.030.552. Internship - Chemistry. 1.0 Credit.
Instructor(s): Staff.

AS.030.582. Research-Inorganic Chemistry I. 3.0 Credits.
Instructor(s): G. Meyer; M. Greenberg.

AS.030.593. Research-Organic Chemistry I. 3.0 Credits.
Instructor(s): M. Greenberg; T. Lectka.

AS.030.597. Research - Summer. 3.0 Credits.
Instructor(s): Staff.

An introduction to statistical mechanics of cooperative phenomena using lattice gases and polymers as the main models. Covered topics: phase transitions and critical phenomena, scaling laws, and the use of statistical mechanics to describe time dependent phenomena.
Instructor(s): R. Hernandez.

AS.030.610. Chemical Kinetics.
The molecular mechanism of elementary physical and chemical rate processes will be studied. Topics such as elastic scattering, collisional vibrational and rotational energy transfer, chemically reactive collisions, and the theory of unimolecular decay will be covered.
Instructor(s): K. Bowen.

AS.030.613. Chemistry-Biology Interface Program Forum I.
Chemistry-Biology Interface (CBI) program students and faculty will meet weekly in a forum that will host presentations from CBI faculty and students as well as invited guest speakers. These meetings will serve as a valuable opportunity for students to develop presentation skills and interact with CBI students and faculty. Enrollment is required for first- and second-year CBI students, and is recommended for advanced year graduate students.
Instructor(s): S. Rokita.

AS.030.614. Chemical-Biology Program Interface Forum II.
Chemistry-Biology Interface (CBI) program students and faculty will meet weekly in a forum that will host presentations from CBI faculty and students as well as invited guest speakers. These meetings will serve as a valuable opportunity for students to develop presentation skills and interact with CBI students and faculty. Enrollment is required for first- and second-year CBI students, and is recommended for advanced year graduate students.
Instructor(s): S. Rokita.

AS.030.615. Bioinorganic Chemistry.
Instructor(s): D. Goldberg.

AS.030.619. Chemical Biology I.
Parts I and II constitute the core course of the Chemistry-Biology Interface (CBI) Program. An introduction to the structure, synthesis, reactivity, and function of biological macromolecules (proteins, nucleic acids, carbohydrates, and lipids) will be provided using the principles of organic and inorganic chemistry. Discussion will incorporate a broad survey of molecular recognition and mechanistic considerations, and introduce the tools of molecular and cellular biology that are utilized in research at the interface of chemistry with biology and medicine. Recommended Course Background: AS.030.206 or equivalent.
Instructor(s): S. Rokita.

AS.030.620. Chemical Biology II.
Selected topics of current importance in chemical biology are covered. They include protein engineering and proteomics, cell signaling, protein-nucleic acid interactions (e.g. replication, transcription, DNA repair), catalytic RNA and the ribosome, biosynthesis of natural products, mechanisms of drug action, combinatorial chemistry and chemical genetics, and in vitro selection. Recommended Course Background: AS.030.619 or permission required.
Instructor(s): S. Rokita.

AS.030.621. Literature-Organic Chemistry.
Instructor(s): L. Cheng.

AS.030.622. Seminar: Literature of Chemistry.
Seminars are presented by advanced graduate students on topics from current chemical journals. Most first-year graduate students are expected to attend for credit. Undergraduates may take the course on a satisfactory/unsatisfactory basis.
Instructor(s): L. Cheng.
Principles and methods for the design and optimization of new biological systems, from a molecular perspective. Topics include: introduction to genetic parts and modern methods for their assembly; synthesis and incorporation of nucleic acids at the level of nucleotides, genes, and genomes; design of genetic programs; library generation and screening; directed evolution and its application to create new proteins and metabolic pathways; computational design of protein and RNA using physical and bioinformatic approaches; non-canonical amino acids and genetic code expansion. This course will also feature critical evaluation of the primary literature in this fast-paced field, and practical experience with relevant software and computational tools.
Instructor(s): S. Fried.

AS.030.625. Advanced Mechanistic Organic Chemistry I.
The course covers the application of techniques in physical chemistry to the study of organic reaction mechanisms. Topics include chemical bonding and structure, stereochemistry, conformational effects, molecular orbital theory, methods to determine reaction mechanisms, reactive intermediates, and photochemistry. Recommended Course Background: AS.030.205-AS.030.206
Instructor(s): J. Tovar.

AS.030.626. Advanced Mechanistic Organic Chemistry II.
This course covers advanced organic reactions and their mechanisms. Emphasis is given both to methods of postulating mechanisms for rationalizing reaction results and to the use of mechanistic thinking for designing reactions and reagents. This course is intended to be taken in sequence with AS.030.425. Recommended Course Background: AS.030.205-AS.030.206
Instructor(s): R. Klausen.

AS.030.630. Molecular Photophysics and Photochemistry.
This course will introduce fundamental physical, chemical, and analytical concepts underlying light-induced chemical and (molecular-based) material processes. The final weeks of this course will build from these core concepts to survey molecular photoresponses and their consequences or applications in environmental chemistry, chemical biology, and materials science.
Instructor(s): A. Bragg
Area: Natural Sciences.

AS.030.634. Topics in Bioorganic Chemistry.
Selected topics in modern bioorganic chemistry will be treated in greater depth emphasizing natural products chemistry, biosynthetic reaction mechanisms and drug design. Carbohydrates, lipids, polyketides, polyamines, terpenes and alkaloids will be discussed. Specific examples of drug design will be introduced throughout and methods of synthesis, combinatorial synthesis and genetics will be described.
Instructor(s): C. Townsend.

AS.030.635. Mthds Nuc Mag/Resonance.
Instructor(s): J. Tolman.

AS.030.652. A Theoretical and Experimental Approach to X-ray Crystallography.
The X-ray course will provide a complete approach to X-ray structure determination (mostly concerned with small molecules) and its uses in Chemistry. The first segment of this course will cover all theoretical aspects of X-ray crystallography, i.e. crystals and crystalization, the nature of X-rays, the diffraction phenomenon of X-rays by crystals, symmetry and space groups, crystal structure analysis. Additionally, the course will provide laboratory experience for the students, involving hands-on instrumentation, experimental methodology to X-ray structure determination, structure solution/refinement, data analyses and publishing data. The course is aimed for graduate students with a strong interest in organic/inorganic chemistry, materials sciences, and physics. Undergraduate students with a major in chemistry are also encouraged to participate.
Instructor(s): M. Siegler
Area: Natural Sciences.

AS.030.677. Advanced Organic Synthesis I.
The reactions and principles involved in the synthesis of simple and complex organic compounds. Discussion of famous natural product syntheses and practice in developing rational designs for organic syntheses. Problems in the design of syntheses and in the use of chemical literature.
Instructor(s): T. Lectka.

AS.030.678. Advanced Organic Synthesis II.
Advanced discussion of organic stereochemistry & its application to problems in asymmetric reactions and catalysis will be presented. Emphasis will be placed on the latest reports in the literature, especially with respect to the development of new catalytic, asymmetric processes.
Instructor(s): T. Lectka.

The course is designed to provide the essential principles and concepts underlying the modern study of the structure and properties of solids in bulk crystals, thin films, and nanoscale objects. Topics include basic crystallography, structure determination by x-ray, neutron, and electron diffraction, fundamental concepts of bonding in solids, lattice dynamics, electronic band structure, magnetism, and strongly correlated electron behavior. Particular emphasis is placed on the impact of the structure, dimensionality, and electron count on electrical and magnetic properties (electric conduction, superconductivity, thermoelectricity, etc). More course info available at <a href="http://occamy.chemistry.jhu.edu">http://occamy.chemistry.jhu.edu</a>. Cross-listed with Physics and Astronomy.
Instructor(s): T. Mcqueen.

In this course we will survey common time-resolved spectroscopic methods used to interrogate the dynamic and static properties of chemical systems. We will explore theoretical treatments both of key molecular processes (e.g. radiative and non-radiative transitions, solvation, coherence dephasing) and the spectroscopic tools used to interrogate them. Furthermore, we will survey the technical developments that are now allowing us to capture events that occur on ever faster timescales (currently down to the attosecond regime) and across the electromagnetic spectrum (from Xrays to Terahertz). Previous or concurrent concentrated study of Quantum Mechanics (graduate level or from a physics course) would be helpful, but not strictly required. Recommended Course Background: AS.030.301-AS.030.302
Instructor(s): A. Bragg.

AS.030.801. Independent Study.
Instructor(s): Staff.
AS.030.372. Biophysical Chemistry. 4.0 Credits.
Course covers classical and statistical thermodynamics, spanning from simple to complex systems. Major topics include the first and second law, gases, liquids, chemical mixtures and reactions, conformational transitions in peptides and proteins, ligand binding, and allostery. Methods for thermodynamic analysis will be discussed, including calorimetry and spectroscopy. Students will develop and apply different thermodynamic potentials, learn about different types of ensembles and partition functions. Students will learn to use Mathematica and will use it for data fitting and for statistical and mathematical analysis. Background: Calculus, Organic Chemistry, and Introductory Physics.
Instructor(s): D. Barrick
Area: Natural Sciences.

Classics
http://classics.jhu.edu
Classics has long been at the heart of humanistic studies at Johns Hopkins University: the very first person appointed to the faculty of the newly founded University in 1876 was Basil L. Gildersleeve (http://archive.magazine.jhu.edu/2009/08/to-understand-ourselves), a professor of Greek. Gildersleeve adopted the most effective model of scholarship at the time—the German seminar, which combined teaching with research—as the basis for training students at Hopkins. This revolutionary structure was central to the new model of the “research university” that Johns Hopkins University pioneered.

Today, the Department of Classics at Johns Hopkins seeks to maintain and enhance this tradition of leadership and innovation. Members of the current faculty are highly interdisciplinary. We combine philological, historical, iconographical, and comparative methods in our investigations of the cultures, broadly conceived, of ancient Greece and Rome, with additional expertise in Reception Studies (aka “The Classical Tradition”) and in the post-classical use of Greek and Latin.

The graduate program reflects these characteristics. It is founded upon intensive study of ancient Greek and Latin language and literature, but also requires rigorous work in such fields as ancient history, art, archaeology, and philosophy, while allowing considerable flexibility to accommodate individual interests. The program aims to produce broad, versatile scholars who have a holistic view of the ancient cultures and of the evidence by which those cultures are comprehended.

The classics department enjoys close ties with several local and regional institutions whose missions include the study of the ancient world, including the Walters Art Museum, with its world-class collection of antiquities and manuscripts; the Baltimore Museum of Art, with its Roman mosaics; and the Center for Hellenic Studies in Washington, D.C. Internationally, it is a member of the American School of Classical Studies in Athens, the American Academy in Rome, and the Intercollegiate Center for Classical Studies in Rome.

The department’s main scholarly resource is the Milton S. Eisenhower Library, which has broad and deep holdings in the various fields of classical antiquity. The department also has a significant collection of Greek, Roman, and Etruscan antiquities, housed in the Johns Hopkins Archaeological Collection (shared with the Department of Near Eastern Studies), and a small reference library in its Gilman Hall seminar room.

Undergraduate Programs
The department offers undergraduate courses in Greek and Latin languages and literature, ancient history, classical art and archaeology, Greek and Roman civilizations, history of sexuality and gender, ancient philosophy, mythology, and anthropological approaches to the classics. These courses are open to all students in the university, regardless of their academic year or major field of interest.

Requirements for the B.A. Degree
(See also Requirements for a Bachelor’s Degree (p. 7).)
The B.A. program in classics is highly flexible, accommodating a variety of interests in and approaches to the ancient world. Possible areas of emphasis include language and literature, ancient philosophy, art and archaeology, and ancient history.
Classics Major

 Certain courses taken in other departments may count toward the major, with the approval of the director of undergraduate studies (DUS). Advanced undergraduates may participate in graduate seminars, with the approval of the DUS and the professor. With assistance from their faculty advisors, students are required to build an intellectually substantial and coherent curriculum and must take all courses for a letter grade and earn a C or better in major requirements. Students are strongly encouraged to complete a course in ancient Greek civilization (usually AS.040.111 (p. 144)) and a course in Roman civilization (usually AS.040.112 (p. 144)) or AS.040.104 (p. 144)).

Major Requirements

Greek or Latin Language Courses

| Two Greek or Latin language courses at any level | 6-8 |
| Two Greek or Latin language courses at the 200-level or above | 6-8 |

Language Proficiency in French, German, or Italian

Proficiency demonstrated through the second semester of intermediate level via course completion or waiver by exam

Classics Courses

Eight courses offered through the Classics Department or cross-listed in Classics 24

A typical program might include the following sequence of courses:

Sample Program

A typical program might include the following sequence of courses:

Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.040.107 Elementary Latin</td>
<td>3.5</td>
<td>AS.040.108 Elementary Latin</td>
<td>3.5</td>
</tr>
<tr>
<td>Classics elective #1</td>
<td>3</td>
<td>French, German or Italian language course</td>
<td>4</td>
</tr>
<tr>
<td>French, German or Italian language course*</td>
<td>4</td>
<td></td>
<td></td>
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</tbody>
</table>

| Credits | 10.5 | 7.5 |

Sophomore

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.040.207 Intermediate Latin**</td>
<td>3</td>
<td>AS.040.208 Intermediate Latin**</td>
<td>3</td>
</tr>
<tr>
<td>Classics elective #2</td>
<td>3</td>
<td>French, German or Italian language course</td>
<td>3</td>
</tr>
<tr>
<td>French, German or Italian language course</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Credits | 9 | 6 |

Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>See below regarding study abroad during the junior year***</td>
<td></td>
<td>Classics elective #4</td>
<td>3</td>
</tr>
</tbody>
</table>

Honors Program in Classics

Classics majors have the opportunity to graduate with honors by writing an honors thesis (15,000-20,000 words) in close consultation with a faculty member. Three credits of “honors thesis research” are awarded in the spring semester of the senior year. (These credits may not be used to fulfill the basic requirements for the Classics BA, which must be met independently of any honors thesis work.)

Entrance to the Classics Honors program is contingent on outstanding performance in previous Classics courses. Students wishing to pursue an honors thesis are expected to consult with the Director of Undergraduate Studies by March 15 of the junior year to allow for adequate advising, planning, and identification of an appropriate honors thesis advisor.

A typical timeline for honors thesis research is as follows: research begins in the summer before the senior year (or earlier); further research and writing continues through the fall, with a draft of the thesis submitted early in the spring semester and a final version submitted in April.

Study Abroad

The Department of Classics is a member of the Intercollegiate Center for Classical Studies in Rome and can provide information on other year-long, semester-long, or summer programs in Greece and Italy (e.g., the College Year in Athens and the summer session of the American School of Classical Studies at Athens). Interested students, especially classics majors and minors, are encouraged to consider these options for studying overseas.
Classics Minor

The requirements for the minor in classics are extremely flexible. Courses are selected, in consultation with the DUS, to meet the needs and interests of the student. Minors may wish to pursue the study of one ancient language, or create a curriculum that meshes with their other academic pursuits. All courses must be taken for letter grades and receive a grade of C or higher.

Minor Requirements

Classics Courses

6 courses offered through the Classics Department or cross-listed in Classics

B.A./M.A. Degree

The department offers a masters degree for current Hopkins undergraduate students. Details may be found on the Graduate tab.

Graduate Programs

Requirements for the B.A./M.A. Degree

Admission to the B.A./M.A. program is restricted to current Johns Hopkins University undergraduate classics majors and is based on outstanding performance in previous classics courses.

Students considering a five-year program are expected to declare their interest during the spring semester of their junior year. Prior to application, students must consult with the director of undergraduate studies, their faculty adviser, and the department administrator. A formal graduate application must be submitted no later than November 15 of the fall semester of the senior year in order for admission to the program in the spring of the senior year, thus meeting the requirement for concurrent status. In the senior (fourth) year, students are to devise a program of study that would best prepare them to do advanced work in their final (fifth) year, in particular addressing any weakness in one or the other classical language. All requirements for the B.A. must be completed by the end of the fourth year.

In the MA (fifth) year, students must complete the following:

Two graduate seminars in the Classics Department

Four semesters (12 credits) of Latin and/or Greek, at least six credits of which must be at the advanced level

A thesis of 20,000 to 25,000 words representing original research. The thesis will be supervised by a member of the Classics Department faculty and graded by the supervisor and a second reader from Classics or an outside department.

Exceptionally well-prepared students may apply for the B.A./M.A. program in the spring of their junior year, with prior approval from the director of undergraduate studies and the department chair. In this case it is possible to complete the bachelor’s/master’s degree in four years, provided all B.A. requirements are fulfilled by the end of the third year. These students are expected to express their interest to the department by the fall term of their junior (third) year; they must then submit an application no later than March 15 in the following semester.

The B.A. and M.A. degrees are conferred concurrently at the end of the M.A. year. Please note that the department does not award degrees during the summer; students are expected to complete the degree requirements in conformance with the university Graduate Board spring deadlines. Specific departmental and Graduate Board deadlines are communicated to the student in due course.

Requirements for the Ph.D. Degree

To receive a Ph.D. in classics from Johns Hopkins University, students must complete successfully a range of seminar work and examinations and then write a substantial dissertation. The Graduate Program in Classics is designed to be completed in five years, of which the first three are dedicated to seminar work and examinations, and the last two to the dissertation. Assuming satisfactory progress toward the Ph.D., all students admitted to the program receive five years of living expenses and tuition remission, in order to make it possible to complete the program in a timely manner. This support takes the form of a fellowship for the first two years, and teaching for at least two of the remaining years. The department may also able to offer teaching opportunities in the summer, as well as funded summer travel for program-related purposes. All students, upon reaching dissertation level, are encouraged to apply for outside funding to spend a year abroad. If outside funding is obtained, the Johns Hopkins fellowship may be held in reserve for an additional year. A detailed outline of the Ph.D. program, including a prospectus of all seminars and exams, can be found on the Classics Department website (http://classics.jhu.edu).

Application information may be obtained from the Graduate Admissions website or by contacting the department chair, Department of Classics, Johns Hopkins University, 113 Gilman Hall, 3400 North Charles Street, Baltimore, MD 21218. Telephone: 410-516-7556; Fax: 410-516-4848; email: classics@jhu.edu. The application deadline is on or about January 15. For the precise date, please refer to the Graduate Admissions website (http://grad.jhu.edu).

For current faculty and contact information go to http://classics.jhu.edu/people/

Faculty

Chair

Shane Butler
Professor of Classics and Nancy H. and Robert E. Hall Professor in the Humanities: Latin Literature (Ancient, Medieval, Renaissance), media history and theory, classical reception

Professors

Richard Bett
Professor (Philosophy and Classics): ancient philosophy, ethics

Silvia Montiglio
Basil L. Gildersleeve Professor of Classics (Director of Graduate Studies): Greek literature and culture, the ancient novel and narrative, philosophy

Matthew Roller
Professor: Latin literature, Roman social and cultural history, Roman material culture, Graeco-Roman philosophy

Associate Professor

Dimitrios Yatromanolakis
Associate Professor: Greek literature, Greek social and cultural history, theory and anthropology of Greek music, papyrology, epigraphy, performance cultures of Greece and Rome

Assistant Professors

Emily Anderson
Assistant Professor: Aegean Bronze Age art and archaeology, material culture, sociocultural interaction, identity, glyptic
AS.040.105. Elementary Ancient Greek. 4.0 Credits.
This course provides a comprehensive, intensive introduction to the study of ancient Greek. During the first semester, the focus will be on morphology and vocabulary. Credit is given only upon completion of a year’s work. Cannot be taken Satisfactory/Unsatisfactory.
Instructor(s): R. Franklin.

AS.040.106. Elementary Ancient Greek. 4.0 Credits.
Course provides comprehensive, intensive introduction to the study of ancient Greek. The first semester’s focus is morphology and vocabulary; the second semester’s emphasis is syntax and reading. Credit is given only upon completion of a year’s work. Course may not be taken Satisfactory/ Unsatisfactory.
Prerequisites: AS.040.105
Instructor(s): M. Asuni.

AS.040.107. Elementary Latin. 3.5 Credits.
This course provides a comprehensive, intensive introduction to the study of Latin for new students, as well as a systematic review for those students with a background in Latin. Emphasis during the first semester will be on morphology and vocabulary. Credit is given only upon completion of a year’s work. Course may not be taken Satisfactory/ Unsatisfactory.
Instructor(s): J. Lenzi; R. Warwick.

AS.040.108. Elementary Latin. 3.5 Credits.
Course provides comprehensive, intensive introduction to the study of Latin for new students as well as systematic review for students with background in Latin. The first semester’s emphasis is on morphology and vocabulary; the second semester’s focus is on syntax and reading. Credit is given only upon completion of a year’s work. Course may not be taken Satisfactory/Unsatisfactory.
Prerequisites: AS.040.107
Instructor(s): A. Tabeling; D. Piana.

AS.040.111. Ancient Greek Civilization. 3.0 Credits.
The course will introduce students to major aspects of the ancient Greek civilization, with special emphasis placed upon culture, society, archaeology, literature, and philosophy.
Instructor(s): J. Smith
Area: Humanities.

AS.040.121. Ancient Greek Mythology: Art, Narratives, and Modern Mythmaking. 3.0 Credits.
This course focuses on major and often intricate myths and mythical patterns of thought as they are reflected in compelling ancient visual and textual narratives. Being one of the greatest treasure troves of the ancient world, these myths will further be considered in light of their rich reception in the medieval and modern world (including their reception in the modern fields of anthropology and philosophy).
Instructor(s): D. Yatromanolakis
Area: Humanities.

AS.040.126. Religion, Music and Society in Ancient Greece. 3.0 Credits.
Emphasis on ancient Greek ritual and mythology; on ancient music, religion, and society; and on cultural institutions such as symposia (drinking parties) and festivals.
Instructor(s): D. Yatromanolakis
Area: Humanities.

AS.040.133. Heroes: the Ancient Greek Way. 3.0 Credits.
The purpose of this course is to introduce students to Ancient Greek literature by reading and discussing its most important and famous texts, from the Iliad and the Odyssey to tragedy to philosophy. Knowledge of Greek is not required.
Instructor(s): S. Montiglio
Area: Humanities.
AS.040.134. Love, War, and Glory: The Gods and Heroes of Greek Mythology. 3.0 Credits.
Greek myths fascinate us as adventurous narratives, yet they always sound enigmatic and require interpretation. This course will combine the pleasure of reading stories and the concern for their understanding. Readings in ancient and modern texts. The course may not be taken S/U. This course meets Hopkins’ requirements for a major in classics.
Instructor(s): D. Piana
Area: Humanities.

AS.040.135. The Grandeur That Was Rome. 3.0 Credits.
At the peak of its power, the Roman empire extended from Scotland to Syria, incorporating numerous cultures, attitudes, and lifestyles. This course examines Roman social practices, political institutions, and religion from the empire’s humble beginnings through its final period, using a wide variety of materials including drama, poetry, history, and oratory. This course may not be taken S/U and meets the Hopkins requirements for a major in classics.
Instructor(s): M. Mueller
Area: Humanities.

AS.040.137. Freshman Seminar: Archaeology at the Crossroads: The Ancient Eastern Mediterranean through Objects in the JHU Archaeological Museum. 3.0 Credits.
This seminar investigates the Eastern Mediterranean as a space of intense cultural interaction in the Late Bronze Age, exploring how people, ideas, and things not only came into contact but deeply influenced one another through maritime trade, art, politics, etc. In addition to class discussion, we will work hands-on with artifacts from the JHU Archaeological Museum, focusing on material from Cyprus.
Instructor(s): E. Anderson
Area: Humanities
Writing Intensive.

AS.040.140. Gender and Sexuality in Early Greece and the Eastern Mediterranean. 3.0 Credits.
In this course we will explore evidence and interpretations of gender and sexuality in the region of the Aegean and eastern Mediterranean during the third and second millennia BCE. Material investigated will include the “snake goddess” figures from Minoan Crete, anthropomorphic figurines from the Cyclades and Cyprus, wall paintings, etc. In each case we will consider the history of interpretation as well as investigate the objects’ archaeological and sociocultural contexts. Discussion topics will include representational ambiguity, the specific materialities of objects, and their possible roles in activities construing gender. The course will incorporate material from the JHU Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities

AS.040.145. Story and Argument from Homer to Petrarch. 3.0 Credits.
Stories entertain us, but we also tell them to make a point. This course will explore the ways that stories were used to make points by Greek and Latin authors from Homer to Petrarch, while also looking at, and comparing them to, the techniques of argument contemporaneous thinkers were developing. This is a course about narrative and rhetoric but also about how and in what way stories matter.
Instructor(s): C. Cannon
Area: Humanities

AS.040.146. Classics and Comics: Ancient Writers and Modern Visual Culture. 3.0 Credits.
Course analyzing the adaptation of ancient Greek and Roman literature and visual culture in modern comic books, graphic novels, and manga.
Instructor(s): G. Gessert
Area: Humanities

AS.040.148. Ancient Israel and Ancient Greece in Opera and on Film. 3.0 Credits.
Some of the most breathtaking (early and later) operas and films have been in intense dialogue with ancient societies, narratives, and cultural concepts. Contemporary hit movies center on diverse aspects of ancient narratives: the beginning of the world, violent wars, politics, erotic themes, and intricate existential questions. The course will introduce students to a comparative examination of the variety of approaches to ancient Israel and ancient Greece in the spectacular worlds of opera and cinema. The course will focus on major texts and archaeological material related to antiquity; works of world cinema will be analyzed.
Instructor(s): D. Yatromanolakis
Area: Humanities.

AS.040.150. Island Archeology: Land and Sea in Ancient Crete, Cyprus and the Cyclades. 3.0 Credits.
Islands present highly distinctive contexts for social life. We examine three island worlds of the ancient eastern Mediterranean. These are places where water had a unique and powerful meaning and boat travel was part of daily life, where palaces flourished and contact with other societies implied voyages of great distance. Class combines close study of material and visual culture with consideration of island-specific interpretive paradigms; trips to Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.152. Medical Terminology. 3.0 Credits.
This course investigates the Greek and Latin roots of modern medical terminology, with additional focus on the history of ancient medicine and its role in the development of that terminology.
Instructor(s): J. Smith
Area: Humanities.

AS.040.160. Special Opportunities in Undergraduate Learning: Constructing an Empire: An Introduction to the Art & Archaeology of Ancient Rome. 1.0 Credit.
Have you ever imagined what it would be like to stroll down the colonnaded streets of ancient Rome, visiting the monuments, palaces and temples of the ancient gods? Have you ever wondered what the luxurious villas looked like from within, or what it would be like to attend a play in an ancient theatre or the gladiatorial games in the Colosseum? This course is designed to introduce students to the material culture of the ancient Roman world by exploring the architecture, sculpture, painting, and mosaics of Rome and its environs. We will also take a field trip to the gallery of Roman art in the Walters Art Museum in order to better understand the Roman Empire through the visual arts.
Instructor(s): A. Tabeling.

AS.040.205. Intermediate Ancient Greek. 3.0 Credits.
Reading ability in classical Greek is developed through a study of various authors.
Prerequisites: AS.040.105 AND AS.040.106 OR Equivalent
Instructor(s): D. Yatromanolakis
Area: Humanities.

AS.040.206. Intermediate Ancient Greek. 3.0 Credits.
Reading ability in classical Greek is developed through a study of various authors, primarily Plato (fall) and Homer (spring).
Prerequisites: AS.040.205
Instructor(s): S. Montiglio
Area: Humanities.
AS.040.207. Intermediate Latin. 3.0 Credits.
Although emphasis is still placed on development of rapid comprehension, readings and discussions introduce student to study of Latin literature, principally through texts of various authors.
Prerequisites: AS.040.107 AND AS.040.108 OR Equivalent
Instructor(s): A. Tabeling; T. Smith
Area: Humanities.

AS.040.208. Intermediate Latin. 3.0 Credits.
Reading ability in Latin is developed through the study of various authors, primarily Cicero (fall) and Vergil (spring).
Prerequisites: AS.040.207
Instructor(s): D. Yatromanolakis
Area: Humanities.

AS.040.218. Celebration and Performance in Early Greece. 3.0 Credits.
Surviving imagery suggests that persons in Minoan and Mycenaean societies engaged in various celebratory performances, including processions, feasts, and ecstatic dance. This course explores archaeological evidence of such celebrations, focusing on sociocultural roles, bodily experience, and interpretive challenges.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.221. Art and Archaeology of Early Greece. 3.0 Credits.
This course explores the origins and rise of Greek civilization from the Early Bronze Age to the Persian Wars (ca. 3100-480 B.C.), focusing on major archaeological sites, sanctuaries, material culture, and artistic production.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.233. The Ancient Greek and Roman Novels. 3.0 Credits.
The ancient Greeks are credited with inventing democracy, philosophy, drama, and science. They also invented the novel. In this class, we will read a large sample of Greek and Roman novels: stories of love, adventures, and magic.
Instructor(s): S. Montiglio
Area: Humanities.

AS.040.235. Past is Present: Cultural Heritage and Global Interactions. 3.0 Credits.
The uncovering, collection and valuation of the archaeological past is deeply embroiled in global interactions - diplomatic, economic, cultural. We examine the complex role of cultural heritage through consideration of case studies and analytic approaches. Frequent visits to area museums.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.236. From Apollo to Dionysus: Ritual, Performance, and the Genesis of Tragedy. 3.0 Credits.
This course explores the origins and development of what is often regarded as the most exemplary form of western art—Classical Athenian Tragedy. Focusing on the ritual, performative, and civic contexts of Greek song culture, it ultimately seeks to pose the question ‘what makes Athens unique?’. To this end, the courses is centered on an examination of texts in tandem with material culture (monumental architecture, temples, dedications, statuary, vase painting). Issues of identity, religion, politics, and athletics will be discussed. Dean's Teaching Fellowship course.
Prerequisites: Prereq: AS.040.111
Instructor(s): T. Smith
Area: Humanities
Writing Intensive.

AS.040.237. Myth and Metamorphosis. 3.0 Credits.
Beginning with close study of the poem itself, this course will examine the unequaled influence of Ovid's Metamorphoses on subsequent literature and art, including theater and film.
Instructor(s): M. Butler
Area: Humanities.

AS.040.238. Freshman Seminar: Magic and Miracles from Antiquity to the Renaissance. 3.0 Credits.
This freshman seminar will explore concepts of magic and miracles and their different forms from ancient Greece and Rome and early Christianity through the Middle Ages up to the Renaissance. Dean's Prize Teaching Fellowship Course.
Instructor(s): M. Mueller
Area: Humanities
Writing Intensive.

AS.040.241. The Greeks and Their Emotions. 3.0 Credits.
This seminar is meant as an introduction to the study of ancient emotions, with a particular emphasis on how the Greeks of the Archaic, Classical and Hellenistic periods conceptualized, portrayed and lived their emotions through linguistic, literary and artistic expression. After an analysis of how the ancient Greek terminology for the emotions differs from our own, we shall focus on the phenomenon of emotion as deeply rooted in the physical body, and in light of this we will contemplate (and question) its universality. Texts will be read in translation. No knowledge of ancient Greek required.
Instructor(s): M. Asuni
Area: Humanities
Writing Intensive.

AS.040.205. Advanced Ancient Greek. 3.0 Credits.
Reading of prose or verse authors, depending on the needs of students. Co-listed with AS.040.705.
Prerequisites: AS.040.205 AND AS.040.206 OR Equivalent
Instructor(s): D. Yatromanolakis
Area: Humanities.

AS.040.206. Advanced Ancient Greek. 3.0 Credits.
Reading of prose or verse authors, depending on the needs of students. Co-listed with AS.040.702.
Prerequisites: AS.040.205 AND AS.040.206 or equivalent
Instructor(s): S. Montiglio
Area: Humanities.

AS.040.307. Advanced Latin Prose. 3.0 Credits.
This course aims to increase proficiency and improve comprehension of the Latin language. Intensive reading of Latin texts, with attention to grammar, idiom, translation, etc. Specific offerings vary. Co-listed with AS.040.707.
Prerequisites: AS.040.207 AND AS.040.208 or equivalent
Instructor(s): M. Butler
Area: Humanities.

AS.040.308. Advanced Latin Poetry. 3.0 Credits.
The aim of this course is to increase proficiency and improve comprehension of the Latin language. Intensive reading of Latin texts, with close attention to matters of grammar, idiom, and translation. Co-listed with AS.040.710.
Prerequisites: AS.040.207 AND AS.040.208 OR Equivalent
Instructor(s): M. Butler
Area: Humanities.
AS.040.320. Myth In Classical Art. 3.0 Credits.
This course traces the representation of the principal gods and heroes of Greek myth in the visual arts (sculpture and vase-painting), as well as later reflections in Roman painting.
Instructor(s): A. Shapiro
Area: Humanities.

AS.040.348. Worlds of Homer. 3.0 Credits.
Through texts, art, and archaeological remains, this course examines the various worlds of Homer--those recalled in the Iliad and Odyssey, those within which the epics were composed, and those born of the poet's unique creative work. Class will make museum visits. Ancient texts read in translation.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.366. The Archaeology of Ancient Cyprus: Investigating a Mediterranean Island World in the JHU Museum. 3.0 Credits.
This course explores the visual and material worlds of ancient Cyprus from the earliest human evidence through the Iron Age. Course topics will include the island’s unique position between the Aegean and Near East and how this has impacted both Cyprus’ ancient past and the way in which it has been conceived in the modern world. Class involves regular analysis of artifacts based in the Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.040.369. The Battle for the 5th Century BC: Athens, Persia, Sparta. 3.0 Credits.
This course explores the achievements and conflicting interactions of Athens, Persia, and Sparta during the 5th century BC, a period whose cultural richness lies at the roots of Western Civilization.
Instructor(s): J. Lamont
Area: Humanities
Writing Intensive.

AS.040.370. Ovid and the Consequences. 3.0 Credits.
Beginning with close study of the poem itself, this course will examine the unequalled influence of Ovid’s Metamorphoses on subsequent literature and art, including theater and film.
Instructor(s): M. Butler
Area: Humanities.

AS.040.373. Propaganda and the Art of Visual Politics during the Roman Empire. 3.0 Credits.
We will examine visual expressions of propaganda in the city of Rome, considering how emperors used public art to promote their political agendas and their ideological vision of power. Dean’s Teaching Fellowship course
Instructor(s): A. Tabeling
Area: Humanities.

AS.040.407. Survey of Latin Literature I: Beginnings to the Augustan Age. 3.0 Credits.
This intensive Latin survey is designed for very advanced undergraduate students—normally those who have completed two semesters of Advanced Latin (AS.040.307/308)—and PhD students preparing for their Latin translation exam. In this course, the first half of a year-long sequence, we will read substantial texts of major Republican and some Augustan authors. The weekly pace is designed to inculcate greater speed and accuracy in Latin reading, and provide significant coverage of various kinds of texts. Recommended background: AS.040.307-308 or equivalent
Prerequisites: AS.040.307 AND AS.040.308 or permission of instructor.
Instructor(s): M. Roller
Area: Humanities.

AS.040.408. Survey of Latin Literature II: Early Empire to the Post-Classical Period. 3.0 Credits.
This intensive Latin survey is designed for very advanced undergraduate students (normally those who have completed the regular undergraduate sequence through the advanced level) and PhD students preparing for their Latin translation exam. In this course, the second half of a year-long sequence, we will read substantial texts of major Imperial authors, as well as a selection of works from Late Antiquity and the Post-Classical period. The weekly pace is designed to inculcate greater speed and accuracy in Latin reading and to provide significant coverages of various kinds of texts. Prior completion of AS.040.407 preferred but not required.
Prerequisites: AS.040.307 AND AS.040.308 or equivalent.
Instructor(s): M. Butler
Area: Humanities.

AS.040.410. Junior-Senior Capstone: Food and Dining in the Ancient World. 3.0 Credits.
This junior-senior capstone course examines the culture of food and drink, and its associated social practices and values, in the ancient Greek and Roman worlds. The evidence examined will include texts, images, and archaeological remains.
Instructor(s): M. Roller
Area: Humanities.

AS.040.412. Junior-Senior Capstone: The Ancient Senses. 3.0 Credits.
This course offers immersion in the rapidly expanding interdisciplinary field of sense studies, with an emphasis on the questions posed thereby to classicists and the humanities generally. It should be useful both to students of antiquity with an interest in the senses and to others who want to explore the role of antiquity in shaping sensory theories.
Instructor(s): M. Butler
Area: Humanities.

AS.040.414. Junior-Senior Seminar: The Art of Ancient Tragedy. 3.0 Credits.
This seminar explores the form and function of tragedy in the ancient Greek and Roman worlds by investigating the dramatic texts themselves, ancient and modern discussions about tragedy, and archaeological remains. As a Junior-Senior Seminar, this course includes instruction in core research methods within Classics and culminates in an individualized research project. Classics majors only
Instructor(s): J. Smith
Area: Humanities.
AS.040.415. Junior-Senior Capstone: Odysseus Becomes an Ass. 3.0 Credits.
We shall focus on one Greek epic, The Odyssey, and one Latin novel, Apuleius’ Golden Ass: what do Odysseus and a donkey have in common? Do they experience similar adventures? How does magic play into the two stories? We shall read both texts in their entirety, including passages in the original languages, and unearth the connections between these two masterpieces of ancient literature.
Instructor(s): S. Montiglio
Area: Humanities.

AS.040.417. Survey of Greek Literature I: Homer to the Classical Period. 3.0 Credits.
We shall read an extensive selection of major texts of Greek literature from Homer to the classical period.
Instructor(s): S. Montiglio
Area: Humanities.

AS.040.501. Independent Study. 3.0 Credits.
Instructor(s): Staff.

AS.040.502. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.040.519. Honors Research. 3.0 Credits.
Instructor(s): Staff.

AS.040.520. Honors Research. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.040.599. Independent Study. 3.0 Credits.
Instructor(s): C. Celenza; M. Roller.

AS.040.601. Italian Renaissance Humanism and Modern Humanities.
This course will reflect on certain key moments in the development of Latinate and Italian Renaissance humanism and will also include reading and discussion of certain recent landmark contributions to the history of the modern humanities.
Instructor(s): C. Celenza.

AS.040.602. Heliodorus.
We shall read and discuss the writing of Heliodorus in the original Greek.
Instructor(s): S. Montiglio.

AS.040.604. Heliodorus II.
We will read the second half of Heliodorus’ Aethiopica in the original Greek and integrate the reading with secondary literature.
Instructor(s): S. Montiglio.

AS.040.606. Topics in Classical Reception.
An exploration of recurring themes and recent trends in the reception of classical antiquity.
Instructor(s): M. Butler.

AS.040.607. Citations.
This course investigates the use of literary citation in ancient scholarly works, including issues of source and accuracy, as well as notions of literary authority (with focus on the use of digital tools for analysis).
Instructor(s): J. Smith.

This seminar explores the topic of Petronius as a historical character in ancient Rome.
Instructor(s): G. Schmeling.

We shall look at several allegorical readings offered in antiquity to interpret myths and literary works, especially, but not only, the epics of Homer.
Instructor(s): S. Montiglio.

AS.040.615. Ovid’s Metamorphoses.
In this seminar, we will study Ovid’s Metamorphoses, paying special attention to the text’s generic playfulness and the author’s poetics of illusion. We will also survey recent critical trends in Ovidian studies.
Instructor(s): M. Butler.

AS.040.616. Latin Literature Beyond Hermeneutics.
This seminar will examine various works from the perspective of recent efforts to move beyond language and interpretation, including histories and theories of material texts, sensation, and aesthetic pleasure.
Instructor(s): M. Butler.

AS.040.618. Around the Gracchi: Current Views on Late Republican Culture, Politics, and Economics.
This seminar explores and appraises the recent revolution in our understanding of the culture, politics, and economics of the late Roman Republic, with a thematic focus on how we now understand the Gracchi as historical actors and as cultural phenomena.
Instructor(s): M. Roller.

AS.040.621. Proseminar to Classical Archaeology.
An introduction to research methods and current topics of discussion in the scholarship on Greek and Roman art and archaeology.
Instructor(s): A. Shapiro.

AS.040.623. Greek Wall Painting.
This seminar will examine wall painting of the Aegean from the Bronze Age to the Hellenistic period. Topics will include crafting, spatial and experiential dynamics, materiality, narrative, iconography and the relationship of the images to their worlds.
Instructor(s): E. Anderson.

AS.040.638. Ancient Literary Criticism.
This course covers essential Greek and Latin texts (e.g. Plato, Aristotle, Homer, Horace, Plutarch) and the commentary tradition (e.g. scholia to Homer and other important authors). Focus is on poetic texts, with some prose.
Instructor(s): J. Smith.

We shall read Musaeus’ “Hero and Leander” and collateral texts, including Ovid’s two letters “authored” by the two protagonists and several sections from the ancient novels, which have influenced Musaeus. If students are interested and time allows, we will read some modern re-writings of this wonderful love story.
Instructor(s): S. Montiglio.

AS.040.665. Survey of Greek Literature.
An intensive survey of Greek poetic and prose texts, which emphasizes reading for comprehension and speed. Texts range from Homer to Lucian.
Instructor(s): J. Smith
Area: Humanities.

AS.040.691. Roman Reciprocities.
This seminar investigates Roman reciprocity and social exchange with a focus on the early empire, in light of both classical anthropological theory and recent work on reciprocity by Classicists and others. Substantial Latin readings from Seneca’s De Beneficiis and such poetic praise texts as the Laus Pisonis and Panegyricus Messalae.
Instructor(s): M. Roller.
AS.040.693. The Pre-Socratics and Early Plato.
This seminar will focus on the earliest phases of European philosophy. Topics that will be examined include: scholarly approaches to the fragments of major thinkers such as Herakleitos and Empedokles; the concept of "fragment," the transition from the pre-Socratics to early Plato; the later reception of Herakleitos and Pythagoras in European thought. Instructor(s): D. Yatromanolakis
Area: Humanities.

AS.040.702. Reading Ancient Greek Poetry.
This reading seminar is intended to train graduate students in direct and critical work on primary sources. Co-listed with AS.040.306. Instructor(s): S. Montiglio.

AS.040.705. Reading Ancient Greek Prose.
This reading seminar is intended to train graduate students in direct and critical work on primary sources. Co-listed with AS.040.305. Recommended Course Background: AS.040.205-AS.040.206. Instructor(s): D. Yatromanolakis
Area: Humanities.

This reading seminar is intended to train graduate students in direct and critical work on primary sources. Co-listed with AS.040.307. Instructor(s): M. Butler.

AS.040.710. Reading Latin Poetry.
This reading seminar is intended to train graduate students in direct and critical work on primary sources. Co-listed with AS.040.308. Recommended Course Background: AS.040.207-AS.040.208. Instructor(s): M. Butler
Area: Humanities.

AS.040.714. Survey of Latin Literature.
This seminar surveys Latin authors and texts represented on the Ph.D. reading list. Intensive, accelerated reading aims to familiarize students with the different authors and their styles, to improve reading speed and accuracy, and prepare students to tackle the remaining works on the reading list by themselves. Instructor(s): M. Roller.

AS.040.716. Petrarch (1304-74) and the Beginnings of Renaissance Latin.
This course will provide close readings of certain Latin texts by Petrarch, with attention to his letters and to other prose works. Instructor(s): C. Celenza.

AS.040.801. Independent Study.
Instructor(s): Staff.

AS.040.802. Independent Study.
Instructor(s): Staff.

AS.040.809. Exam Preparation.
Study in preparation for a comprehensive oral exam, required to become a PhD candidate, and consisting of three fields in classics and related areas. Instructor(s): S. Montiglio.

AS.040.810. Exam Preparation.
Study in preparation for a comprehensive oral exam, required to become a PhD candidate, and consisting of three fields in classics and related areas. Instructor(s): S. Montiglio.

No Audits. Instructor(s): Staff.
AS.010.421. Creating Sacred Space in the Ancient and Medieval World.
3.0 Credits.
What makes a space sacred? How is it different from other spaces? This seminar explores the various means - visual, artifactual, architectural, and performative - of creating sacred space in the ancient and medieval worlds of the Near East and Mediterranean. Possible cases for study include early Sumerian temples, state-sponsored Assyrian temples, votive deposits, Greek sanctuaries, sanctuaries and landscape, early medieval Jewish, Christian, and Islamic cult buildings, cave sanctuaries, pilgrim sites, icons and sacred space.
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

The arts of the Near East, Aegean and Egypt are typically taught separately from one another. However, the Mediterranean Sea has always served as a connector, and the diverse cultures of these areas were in close contact with one another for much of their histories. During the Bronze Age (3000 to 1200 BCE), these interactions were particularly dynamic, resulting in a diversity of arts including wall frescoes, precious jewelry, and elaborate furnishings and weaponry. This course examines the arts of the interactions among Near Easterners, Greeks, Egyptians and others. It focuses special attention on the role of artistic products in intercultural relations, including trade, diplomacy, war and imperialism. Students are not expected to have extensive knowledge of all the areas, although some experience in at least one of them will be helpful. The course will interweave establishing a knowledge base necessary to tackle this topic with broader conceptual concerns and interdisciplinary approaches (art historical, archaeological, anthropological, and historical). There will be a final paper.
Instructor(s): E. Anderson; M. Feldman
Area: Humanities

English
AS.060.604. Philology.
An examination of the many ways (both as old and then ‘New’, but also as the subject of a key ‘return’) that ‘philology’ has been claimed as the master category of literary study. The nuts and bolts of older philological procedures as well as the broadest theoretical claims for the term will be attended to.
Instructor(s): C. Cannon
Area: Humanities
Writing Intensive.

Near Eastern Studies
AS.130.110. Introduction To Archaeology. 3.0 Credits.
An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.
Instructor(s): E. Anderson
Area: Humanities, Social and Behavioral Sciences.

Archaeology
AS.136.101. Introduction To Archaeology. 3.0 Credits.
An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.
Instructor(s): G. Schwartz
Area: Humanities, Social and Behavioral Sciences.

Medical, Science and the Humanities
AS.145.101. Death and Dying in Art, Literature, and Philosophy: Introduction to Medical Humanities. 3.0 Credits.
This team-taught course offers an interdisciplinary introduction to the medical humanities. The course examines how death, dying, and the treatment of the dead are explored in their changing historical, anthropological, philosophical, literary, art historical and medical dimensions. Open to freshmen, sophomores, and upperclass Medicine, Science, and Humanities majors.
Instructor(s): E. Ender; M. Merback; W. Stephens
Area: Humanities
Writing Intensive.

Philosophy
AS.150.134. Freshman Seminar: Socrates in Context. 3.0 Credits.
A study of Socrates as portrayed by his contemporaries, and of intellectual and political trends to which he may have been reacting. Authors will include Plato, Xenophon and Aristophanes. Freshmen Only.
Instructor(s): R. Bett
Area: Humanities.

AS.150.201. Introduction To Greek Philosophy. 3.0 Credits.
A survey of the earlier phase of Greek philosophy. Socrates, Plato, and Aristotle will be discussed, as well as two groups of thinkers who preceded them, usually known as the pre-Socratics and the Sophists.
Instructor(s): R. Bett
Area: Humanities.

AS.150.401. Greek Philosophy: Plato and His Predecessors. 3.0 Credits.
A study of pre-Socratic philosophers, especially those to whom Plato reacted; also an examination of major dialogues of Plato with emphasis upon his principal theses and characteristic methods.Cross-listed with Classics.
Instructor(s): R. Bett
Area: Humanities
Writing Intensive.

AS.150.402. Aristotle. 3.0 Credits.
A study of major selected texts of Aristotle.
Instructor(s): R. Bett
Area: Humanities
Writing Intensive.

AS.150.403. Hellenistic Philosophy. 3.0 Credits.
A study of later Greek philosophy, stretching roughly from the death of Aristotle to the Roman imperial period. Epicureans, Stoics, and Skeptics will be the main philosophical schools examined.
Instructor(s): R. Bett
Area: Humanities
Writing Intensive.
German Romance Languages Literatures
AS.211.475. Inside the Writer's Laboratory. 3.0 Credits.
How do books come to life? Behind every masterpiece is a tale of hard work, dialogue with other texts, and constant negotiations with social and material circumstances that evolve over time. This course opens up the "laboratory" of figures of the European Renaissance like Erasmus, Machiavelli, and Montaigne to explore the world of writerly culture in its manifold expressions, including authorial revision, self-translation, controversy, censorship, intertextuality, and forgery. Our own laboratory will be the Department of the Special Collections, where we will spend a good deal of our time handling manuscripts and early printed books. Course may be used to satisfy major requirements in both French and Italian sections.
Instructor(s): S. Miglietti
Area: Humanities
Writing Intensive.

AS.211.714. Ariadne's Threads: Metamorphosing Mythologies.
Abandoned by Theseus, Ariadne lamenting on the shore of Naxos embodies one of the most powerful tropes in literature and the arts. The fate of the heroine who helped Theseus out of the labyrinth became herself a thread (indeed, an inexhaustible series of threads) running across the ages and populating the imagination of poets, painters, composers. After exploring in detail the classical sources that canonized Ariadne's myth (Catullus, Carmina, 64; Ovid, Heroïdes, 10) as well as references to the myth found in other classical authors (Homer, Hesiod, Pausanias, Plutarch, Propertius), we will turn to the reception of Ariadne in literature and music (Ariosto, Rinuccini-Monteverdi, Haydn, Nietzsche, Strauss-Von Hofmannsthal). The analysis of the various case studies will focus on the rhetorical and poetical devices used by poets and composers to reenact the vocal features of Ariadne's lament.
Instructor(s): E. Refini
Area: Humanities

AS.214.390. Machiavelli: A Renaissance Master. 3.0 Credits.
Who was Niccolò Machiavelli? The author of the Italian Renaissance's most famous book, The Prince, he also wrote histories, commentaries, comedies, and letters. And he had a career as a prominent Florentine diplomat, which ended tragically but informed everything he wrote. This course is intended to offer students an introduction to Machiavelli's major works and to the intellectual, social, and political contexts that shaped his thinking.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.437. The Intellectual World of the Italian Renaissance. 3.0 Credits.
This course is intended to familiarize students with the intellectual world of Renaissance Italy, or more specifically, the "lost" Italian Renaissance of the long fifteenth century, from the time when Petrarch (1304-74) was in full maturity to the 1520s. During this period, most Italian intellectuals wrote the majority of their work in Latin—not the Medieval Latin of the Church and the universities but in what they saw as a more authentic Latin, like that used in ancient Rome, in the time of Cicero, Virgil, Quintilian, and others. These Renaissance "humanists," inspired by the example of Roman, and eventually Greek, antiquity, believed that they were carrying out a cultural revival. Who were these humanists? Why then did they choose Latin (and a reformed Latin at that) instead of their "native" tongue as the language in which to effect this renewal? What did this choice afford them in terms of literature and philosophy? Why was this phase of literary and philosophical history undervalued in the evolution of modern scholarship? By the end of this course, you should be able to formulate answers to those questions. Some of the works of these authors still await editions, lying in manuscript libraries or difficult-to-access early printed editions. Many have now had their Latin texts edited, and a number have recently been translated into English. Students therefore have the chance to explore work in a field that is new and growing. A separate Renaissance Latin reading group will accompany the course for those who have studied Latin.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.445. Boccaccio's Decameron and the Multiplicity of Story-Telling. 3.0 Credits.
Boccaccio's Decameron (1352), a collection of 100 short stories, ranges from the bawdy through the cynical to the romantic and even fantastic. It has inspired numerous writers, artists, musicians and film-makers. We will read Boccaccio's masterpiece on its own terms and in relation to the development of story-telling, from gossipy "news" (novelle) to artistic short story, theatrical adaptation, literary fairy-tale, and the fantastic. The Decameron will be compared with its forerunners in saints' lives, bawdy fabliaux, and moral exempla, and with its literary, theatrical, and filmic imitators in Italy and Europe. Italian graduate students and undergraduate majors will attend an extra weekly meeting conducted in Italian. Those students should enroll in section 2 which will be awarded 4 credits.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.347. Petrarch and the Beginnings of the Renaissance. 3.0 Credits.
This course will focus on the life, work, and thought of Francesco Petrarca, or "Petrarch." Though known today primarily as the author of Italian love poetry, Petrarch considered his Latin work more lasting. We will explore both sides of his work, the vernacular and Latin (in English translation) to come to an understanding of his place in medieval intellectual history, the history of philosophy, and the history of literature.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.377. Gendered Voices. 3.0 Credits.
The course will explore the notion of 'voice' in order to show how poetry, literature, philosophy, and music have been dealing with it throughout the ages. In particular, by focusing on classical figures such as the Sirens, Circe and Echo, as well as by considering the seminal discussions of the 'voice' in Plato and Aristotle, the course will address the gendered nature of the voice as a tool to seduce and manipulate the human mind. More specifically, the course will discuss the ways in which male and female voices embody different examples. Functions to be analyzed include texts by Dante, Petrarch, Ariosto, and Tasso. The course will also consider later rewritings of myths concerned with the voice such as Giuseppe Tomasi di Lampedusa's The Siren and Italo Calvino's A King Listens.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.
AS.214.477. Magic, Marvel, and Monstrosity in the Renaissance. 3.0 Credits.

Magic, Monstrosity,and Marvels or Wonders call into question what we see and experience: what is reality, what is illusion; what’s natural and what’s supernatural? What’s human and what’s more, or less, than human? During the Renaissance, ideas about the nature of reality were bound up with questions and issues very different from those of our time. With the exact sciences still being invented, the nature of the world was much less hard and fast for Renaissance people than it is for the modern educated person. The literary masterpieces of the Italian Renaissance provide vivid illustrations of the early modern sense of wonder. Foremost among these are the theatrical comedies which Italian authors revived in imitation of the ancients, and the romances, especially Ariosto's Orlando furioso (1532) and Tasso's Gerusalemme liberata (1581). These and other works influenced ideas about magical and marvelous phenomena across Europe for centuries to come. Works will be read and discussed in English. Italian majors and graduate students (who should enroll in section 2) will attend a weekly supplemental discussion in Italian and compose their written work in Italian.

Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.


Although naturally and historically intertwined, music and poetry tended to be described in the early modern period as competing rather than interacting. By looking at both literary and theoretical texts, the seminar aims to explore the ways in which this controversial relation is revealed by the interplay of poetics, rhetoric, and music theory. Reading materials will include classical sources (e.g. Plato, Aristotle, Ps.-Longinus, Quintilian) and their early modern interpretations. Special attention will be given to Torquato Tasso, Giambattista Marino, and Giambattista Doni, whose works will be also discussed in the light of the contemporary development of musical genres (e.g. madrigals, opera). No musical skills required.

Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.655. Translating Knowledge: Brunetto’s Tresor and Dante’s Convivio.

By focusing on Brunetto Latini’s Tresor and Dante Alighieri’s Convivio, the seminar will examine the notion of “encyclopedic knowledge” in the Middle Ages. The two works — both examples of “translation” — call traditional ideas of knowledge into question. The seminar will study the Convivio as a response to the Tresor and will situate Dante’s project within a wider discussion of vernacular translation as a key tool for the dissemination of the classical tradition in the Middle Ages.

Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.684. The Commentary Tradition and the Birth of Literary Scholarship.

The practice of commenting on texts lies at the foundations of what we call today “literary criticism.” From the Bible to Dante’s Divine Comedy, from Greek and Latin poetry to medieval and Renaissance literary writings, the many questions posed by the commentators have contributed widely to the shaping of the modern notions of reading and interpretation. What do we look for when we read a text? How do we approach it? How does our reading interact with the author’s intention? To what extent is the commentator appropriating the author’s prerogatives? By exploring a wide range of case studies, the seminar aims to reassess the role of the commentary tradition within the development of literary scholarship and as a genre per se. Some sessions will take place at the Hopkins Special Collections and at the Walters Art Museum, where students will have the opportunity to work on both manuscripts and early prints, and select materials for their presentations.

Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.716. Translation and Vernacular Readership in Italy, 1250-1500.

Translation is usually acknowledged as instrumental to the rise of vernacular readership in medieval and early modern Europe. By reconsidering seminal contributions such as Erich Auebarch’s, this seminar will explore the textual and cultural implications of the translative process that played a major role in the medieval reception of antiquity. Special attention will be given to translation theory and its history.

Instructor(s): E. Refini
Area: Humanities
Writing Intensive.
Instructor(s): R. Franklin

theoretical frameworks. All course material will be in English.

tragedy. Special emphasis will be given to exchange, gender, and feminist strategies for reading ancient Greek texts, especially epic, lyric poetry, and Helen. Students will gain historical tools necessary to think about gender in antiquity, with a particular focus on Clytemnestra, Medea, and Helen. Recommended Course background: Italian and Latin

Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

Interdepartmental

AS.360.133. Freshman Seminar: Great Books at Hopkins. 3.0 Credits.
Freshman Seminar: Students attend lectures by an interdepartmental group of Hopkins faculty and meet for discussion in smaller seminar groups; each of these seminars is led by one of the course faculty. In lectures, panels, multimedia presentations, and curatorial sessions among the University's rare book holdings, we will explore some of the greatest works of the literary and philosophical traditions in Europe and the Americas. Close reading and intensive writing instruction are hallmarks of this course; authors for Fall 2018 include Homer, Boethius, Machiavelli, Shakespeare, Descartes, Apha Behn, Mary Shelley, Mozart, Douglass, and Woolf.

Instructor(s): E. Patton; E. Refini; S. Weiss; W. Egginton
Area: Humanities
Writing Intensive.

AS.360.134. Great Books at Hopkins II: The Sciences. 3.0 Credits.
Great Books at Hopkins II: The Sciences will combine readings from philosophy and literature with foundational texts from several scientific disciplines. Readings for this spring will explore links between traditional theories of economics and genetics in the context of literary developments, and will include: Xenophon's Deconomicus, Mendel's "Experiments on Plant Hybridization," Marx's Communist Manifesto, Darwin's The Origin of Species, Swift's A Modest Proposal, Wharton's House of Mirth, and Joyce's Finnegans Wake.

Instructor(s): E. Patton; M. Roller
Area: Humanities
Writing Intensive.

Study of Women, Gender, Sexuality

AS.363.330. Gender & Sexuality beyond the Global West: The Poetics of "Nasty Women" in Archaic and Classical Greece. 3.0 Credits.
This course is meant to examine the depiction of ambitious and intelligent women in ancient Greek literature of the Archaic and Classical Periods. During this semester we will acquire the critical tools necessary to think about gender in antiquity, with a particular focus on Clytemnestra, Medea, and Helen. Students will gain historical background of ancient Greece, become familiar with a variety of theoretical approaches for understanding gender in antiquity, and develop strategies for reading ancient Greek texts, especially epic, lyric poetry, and tragedy. Special emphasis will be given to exchange, gender, and feminist theoretical frameworks. All course material will be in English.

Instructor(s): R. Franklin
Area: Humanities.

Program in Museums and Society

AS.389.205. Examining Archaeological Objects. 3.0 Credits.
This course considers the role of materials in the production, study and interpretation of objects by examining artifacts from the Johns Hopkins Archaeological Museum. Students will consider materials such as ceramics, stone, metal, glass, wood and textiles, and visit artists' studios to gain an understanding of historical manufacturing processes. M&S practicum course. Cross-listed with Archaeology, Near Eastern Studies, Classics, and History of Art.

Instructor(s): S. Balachandran
Area: Humanities.

AS.389.315. Ancient Color: The Technologies and Meanings of Color in Antiquity. 3.0 Credits.
What role did the colorful surfaces of sculptures, vessels and textiles play in the ancient world? We examine historical texts and recent scholarly and scientific publications on the technologies and meanings of color in antiquity, and use imaging and analytical techniques to study polychromed objects from the Johns Hopkins Archaeological Museum.

Instructor(s): S. Balachandran
Area: Humanities, Social and Behavioral Sciences.

AS.389.335. Recreating Ancient Greek Ceramics. 4.0 Credits.
This hands-on course in experimental archaeology brings together undergraduate and graduate students across disciplines to study the making of Athenian vases. Students work closely with expert ceramic artists, and in consultation with art historians, archaeologists, art conservators, and materials scientists to recreate Greek manufacturing processes.

Instructor(s): S. Balachandran
Area: Humanities.

Cognitive Science

http://www.cogsci.jhu.edu

Cognitive science is the study of the human mind and brain, focusing on how the mind represents and manipulates knowledge and how mental representations and processes are realized in the brain. Conceiving of the mind as an abstract computing device instantiated in the brain, cognitive scientists endeavor to understand the mental computations underlying cognitive functioning and how these computations are implemented by neural tissue. Cognitive science has emerged at the interface of several disciplines. Central among these are cognitive psychology, linguistics, and portions of computer science and artificial intelligence; other important components derive from work in the neurosciences, philosophy, and anthropology. This diverse ancestry has brought into cognitive science several different perspectives and methodologies. Cognitive scientists endeavor to unite these several perspectives around the central goal of characterizing the structure of human intellectual functioning. It is this common object of inquiry that integrates traditionally separate disciplines into the unified field of cognitive science.

Programs in cognitive science at Johns Hopkins University reflect the interdisciplinary nature of the subject, requiring the student to approach the study of the mind/brain from several different investigative perspectives. Programs in cognitive science draw on courses offered by several other departments as well.
Facilities
The department is located in Krieger Hall. Laboratory and office space is provided for graduate students. The department's research facilities are provided by the following laboratories:

- Language and Cognition Lab (Landau)
- Language Acquisition Lab (Legendre)
- Computational Psycholinguistics Lab (Linzen)
- Cognitive Neuroscience Lab (McCloskey)
- Cognitive and Brain Sciences Lab (Rapp)
- Semantics Lab (Rawlins)
- Computational Linguistics Lab (Smolensky)
- Phonetics/Phonology Lab (Wilson)
- Computational Cognition, Vision, and Learning Group (Yuille)
- Integrated Experimental/Theoretical Grammar Research (IGERT) Lab
- and Library

Department members also conduct research in the F.M. Kirby Center for Functional Brain Imaging at the Kennedy Krieger Institute and in other laboratories at Johns Hopkins School of Medicine.

Undergraduate Programs
Our cognitive science undergraduate program reflects the interdisciplinary nature of the field, allowing students to approach the study of the mind and brain from multiple perspectives. Students gain broad knowledge of the field as a whole, plus a greater depth of the understanding in two of the sub-disciplines within the field. Training emphasizes not only learning about the principal theories and evidence, but also development of the conceptual and practical skills needed for understanding and conducting theoretical and empirical work in the field.

Our department offers a B.A. in Cognitive Science as well as a Linguistics Minor (p. 158).

B.A. in Cognitive Science
Also see Requirements for a Bachelor's Degree (p. 7).

Cognitive Science Major Requirements
The required courses for cognitive science majors are divided into five general areas, as described below. The program is structured so as to ensure some exposure to each of the five areas. In addition, it provides in-depth training in two of the areas, deemed focal areas, chosen by the student. Majors in cognitive science thus acquire a broad perspective which will enable them to situate particular research disciplines within the overall study of the mind/brain.

Areas of Focus: Students must take courses in all five focal areas; however, two focal areas must be chosen in which a greater selection of courses is required. The three focal areas not chosen may be referred to as 'non focal' areas for advising purposes. Courses offered by our department and other affiliated departments (e.g., Departments of Psychological and Brain Sciences, Philosophy, Computer Science, Neuroscience, etc.) may be used to satisfy the requirements for these areas. Examples of courses that satisfy the requirements for each area can be found on our website. (http://cogsci.jhu.edu/undergraduate/cognitive-science-majors) However, please note that courses change over time, and some courses are not offered every year. The Director of Undergraduate Studies (http://advising.jhu.edu/completing-your-degree/directors-of-undergraduate-studies) can answer questions about which courses qualify for each focal area.

- Cognitive Psychology/Neuropsychology
- Linguistics
- Computational Approaches to Cognition
- Neuroscience
- Philosophy of Mind

B.A. Coursework
The below requirements are for students who entered in Fall 2018 or after. Students who entered prior to Fall 2018 should refer to the academic catalog from the year they entered (http://e-catalog.jhu.edu/archive). Students who entered prior to Fall 2018 may follow the new Math Option B or the old Math Option B.

Introductory Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.050.101</td>
<td>Cognition</td>
</tr>
</tbody>
</table>

Two Focal Areas, see areas above

Four courses in each of the two selected focal areas. Research, readings, and practica courses do not qualify.

At least two courses in each focal area must be at the 300-600 level.

Three 'Non-Focal' Areas

One course at any level from each of the three non-focal areas. Research, readings, and practica courses do not qualify.

Additional Upper-Level Elective Courses

Nine credits at the 300-600 level, chosen from any of the five areas or other cognitive science offerings.

Math Requirement (Option A or B)

Math Option A: Any two of the following courses:

- AS.110.106 Calculus I (Biological and Social Sciences)
- or AS.110.107 Calculus II (For Biological and Social Sciences)
- or AS.110.109 Calculus II (For Physical Sciences and Engineering)
- or AS.110.118 Honors Single Variable Calculus

Math Option B: Statistics Sequence

- AS.200.200 Research Methods in Experimental Psychology
- & AS.200.201 Research and Design & Analysis for Experimental Psychology

‡ For students with Linguistics as one of their focal areas, one intermediate or advanced foreign language course may be used to partially satisfy the upper-level course requirement for that area and one other intermediate or advanced foreign language course may be used to partially satisfy the Additional Upper-Level Elective Courses requirement.

† Up to three credits of cognitive science research, readings, or practica may be applied to the Additional Upper-Level Elective Courses requirement.
Additional Cognitive Science Major Information

- Departmental requirements may not be taken Satisfactory/Unsatisfactory, with the exception of research and practica.
- A grade of C- or better must be earned in all major requirements.

Sample Program
The below sample program demonstrates how a student with the focal areas (p. 157) of Cognitive Psychology/Neuropsychology and Linguistics might complete the Cognitive Science major requirements in four years. In this scenario, the student has not placed out of any foreign language requirements. Each student's path through the program will have variation depending on the two focal areas they choose to pursue within the major.

Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.050.101 Cognition</td>
<td>3</td>
<td>Course in Neuroscience area (any level)</td>
<td>3</td>
</tr>
<tr>
<td>Course in Linguistics area (any level)</td>
<td>3-4</td>
<td>Entry-level foreign language course</td>
<td>3-4</td>
</tr>
<tr>
<td>Entry-level foreign language course</td>
<td>3-4</td>
<td>6-7</td>
<td>6-7</td>
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</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course in Computational Approaches to Cognitive Science area (any level)</td>
<td>3-4</td>
<td>Course in Cognitive (Neuro)Psychology area (any level)</td>
<td>3</td>
</tr>
<tr>
<td>Course in Cognitive (Neuro)Psychology area (any level)</td>
<td>3</td>
<td>AS.200.201 Design Analysis for Experimental Psychology</td>
<td>4</td>
</tr>
<tr>
<td>AS.200.200 Research Methods in Experimental Psychology</td>
<td>4</td>
<td>Intermediate language course</td>
<td>3-4</td>
</tr>
<tr>
<td>Intermediate language course</td>
<td>3-4</td>
<td>13-15</td>
<td>10-11</td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course in Philosophy of Mind area (any level)</td>
<td>3</td>
<td>Cognitive Science elective (300-level or above)</td>
<td>1-4</td>
</tr>
<tr>
<td>Course in Linguistics area (any level)</td>
<td>3-4</td>
<td>Course in Cognitive (Neuro)Psychology area (300-level or above)</td>
<td>3-4</td>
</tr>
<tr>
<td>6-7</td>
<td></td>
<td>4-8</td>
<td>4-8</td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course in Linguistics area (300-level or above)</td>
<td>3-4</td>
<td>Cognitive Science elective (300-level or above)</td>
<td>1-4</td>
</tr>
<tr>
<td>Cognitive Science elective (300-level or above, including research, readings, practica)</td>
<td>1-4</td>
<td>Course in Cognitive (Neuro)Psychology area (300-level or above)</td>
<td>3-4</td>
</tr>
<tr>
<td>4-8</td>
<td>4-8</td>
<td>4-8</td>
<td>4-8</td>
</tr>
</tbody>
</table>

Total Credits: 53-71

Practicum in Language Disorders
In addition to having numerous research opportunities year-round, our department also offers AS.050.318 Practicum in Language Disorders-Community Based Learning (also listed as AS.080.400 Research Practicum: Language Disorders-Community Based Learning in the Department of Neuroscience) to its majors. Each fall and spring semester two qualified upperclassmen may enroll in this practicum and have the unique opportunity to learn about adult aphasias, be trained in supportive communication techniques, and work as a communication partner with an individual with aphasia throughout the semester at SCALE (http://www.scalebaltimore.org), a local aphasia support non-profit organization.

Departmental Honors
To receive Honors in Cognitive Science, graduating seniors must have a major GPA of 3.5 or higher and complete an Honors Clearance (http://advising.jhu.edu/student-roadmap/seniors/honors) with the department's Director of Undergraduate Studies (http://advising.jhu.edu/completing-your-degree/directors-of-undergraduate-studies)'s approval. Only courses directly applied to a student's cognitive science major, including math and foreign language requirements, will be included in the major GPA calculation. All other elective courses should be excluded from the major GPA calculation. If the GPA requirement is met, the departmental honors will appear on the student's transcript and will be indicated in that year's Commencement program.

Excellence in Cognitive Science Award
Each year at Commencement, a cognitive science graduating senior with a stellar academic and research record. The department's faculty make nominations and the Director of Undergraduate Studies announces the winner. This honor is accompanied by a $500 award.

Minor in Linguistics
A minor in linguistics is available to undergraduates majoring in any department, except for cognitive science majors who choose linguistics as a focal area. Students intending to minor in linguistics should declare their intention, preferably by the beginning of junior year. A grade of C- or better must be earned in all minor requirements.

Linguistics Minor Requirements

Foreign Language
One foreign language through the intermediate level OR two foreign languages at the elementary level.

Linguistics Courses
Four of the required six linguistics courses must be at the 300-level or above, excluding research and readings.
Graduate Programs
(For precise and up-to-date information on these M.A. and Ph.D. graduate programs, visit www.cogsci.jhu.edu/graduate.)

Masters of Art Program
MA Requirements for Admission
This intensive, one-year M.A. program is intended to appeal to students who have undergraduate degrees in linguistics, psychology, computer science, neuroscience, and other sub-disciplines of cognitive science. Prominent in this program is the emphasis of faculty mentorship of the students during the application period and throughout the duration of the program. There are two distinct tracks in the M.A. program: Course Track and Research Track. Besides traditional required admissions materials, the Research Track is the only track that has a coursework prerequisite: three credits of undergraduate research or equivalent. Please visit the link at the beginning of this section to find more detailed information on the program and specific admissions requirements.

MA Degree Requirements
Completion of this M.A. program strengthens the qualifications of students who will be applying for Ph.D. programs and also provides career opportunities in areas including science writing, research coordinator, human factors IT, and community college teaching, among others.

Courses may not be double-counted. Each course may only be used to satisfy a single degree requirement, even if it may qualify for more than one requirement.

Course Track: Students in this track must complete 12 courses with a grade of B- or better. See the course requirements below. Additionally, MA students are expected to take a research ethics course (AS.360.625 Responsible Conduct of Research). See the coursework requirements below. As the capstone event for a student’s completion of the program, he/she must produce a portfolio of accomplishments from the program (e.g., course assignments, seminar papers) overseen by the faculty adviser, prepare a reading list and set of discussion questions, and present what has been learned from the year of study at an Oral Presentation supervised by two faculty members.

MA Course Track Requirements
Coursework: Seven courses, 600 or above
Lab or Research Seminars: Two courses, 800-level
Directed Readings and/or Research: Three courses taken throughout the program, including one during Intersession. Below are the course numbers:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.050.690</td>
<td>Directed Readings in Cognitive Science</td>
</tr>
<tr>
<td>AS.050.839</td>
<td>Research in Cognitive Science</td>
</tr>
<tr>
<td>AS.360.625</td>
<td>Responsible Conduct of Research</td>
</tr>
</tbody>
</table>

Capstone: Portfolio and Oral Exam

* Up to three courses may be substituted by 300/400-level courses with a mentor’s written permission.

Research Track: Students in this track must complete 12 courses. Students must work on full-time research overseen by their faculty adviser and must complete maintain a B- or better in all coursework. Additionally, MA students are expected to take a research ethics course (AS.360.625 Responsible Conduct of Research). See the course requirements below. At the end of the program, a student in the research track must produce and defend research paper that is approved by the faculty adviser.

MA Research Track Requirements
Formal Methods or Statistics course: One of the following
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.200.657</td>
<td>Advanced Statistical Methods (previously listed as AS.200.314)</td>
</tr>
<tr>
<td>AS.050.670</td>
<td>Mathematical Models of Language</td>
</tr>
<tr>
<td>AS.050.671</td>
<td>Bayesian Inference</td>
</tr>
<tr>
<td>AS.050.672</td>
<td>Foundations of Neural Network Theory</td>
</tr>
</tbody>
</table>

Lab or Research Seminar: Two courses, 800-level

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>AS.050.839</td>
<td>Research in Cognitive Science (Four courses. Students register in this research course each term: fall, intersession, spring and summer.)</td>
</tr>
</tbody>
</table>

Additional Courses: Three courses, 600-level or above
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>AS.360.625</td>
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</tr>
</tbody>
</table>

Capstone: Research Paper and Oral Defense

Financial Support
No regular funding is provided to students in the M.A. program, though a 50% reduction in tuition is offered to students with JHU undergraduate degrees. Students will be encouraged to seek funding from both internal and external sources.

Doctoral Program
PhD Requirements for Admission
A program of study leading to the Ph.D. degree is open to students with a bachelor’s or master’s degree in cognitive science or one of the several areas that contribute to it. Prospective doctoral students would be well advised to take courses in cognitive psychology, linguistics, and computer science. Some preparation in the foundations of contemporary neuroscience is also an asset, as is training in the philosophical issues surrounding the study of mind and consciousness. However, there are no fixed prerequisites (in the form of specific required courses) for admission to the doctoral program. The Department of Cognitive Science invites inquiries from students who are prepared in any of the related fields and who are interested in extending their work to the broader study of the mind/brain.

PhD Degree Requirements
The Department of Cognitive Science’s Ph.D. requirements consist of coursework, foreign language competence, teaching experience, and research papers. The requirements are designed to meet the following goals:

- **Depth**: Students become expert in their primary area of research interest and also are prepared so that they will be competitive for academic positions in one of the traditional disciplines. Students take 8–10 advanced courses that the student, in conjunction with his/her advisory committee, determines to be important for achieving expertise in a chosen research area and marketplace competitiveness in one of the traditional areas: cognitive psychology/neuropsychology, computer science or linguistics.

- **Breadth**: Students develop the ability to understand, appreciate and critically evaluate work in the various sub-disciplines of cognitive science by taking a selection of courses, two each in the areas of cognitive psychology/neuropsychology, computation and linguistics and one each in philosophy and cognitive neuroscience. Students may place out of breadth courses based on undergraduate numbers:

- **Depth**: Students must take at least 8 advanced courses in their primary area of research interest and are expected to complete a research ethics course (AS.360.625 Responsible Conduct of Research). See the coursework requirements below. At the end of the program, a student in the research track must produce and defend research paper that is approved by the faculty adviser.

PhD Research Track Requirements
Formal Methods or Statistics course: One of the following
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<td>Foundations of Neural Network Theory</td>
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</tbody>
</table>

Lab or Research Seminar: Two courses, 800-level

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- **Breadth**: Students develop the ability to understand, appreciate and critically evaluate work in the various sub-disciplines of cognitive science by taking a selection of courses, two each in the areas of cognitive psychology/neuropsychology, computation and linguistics and one each in philosophy and cognitive neuroscience. Students may place out of breadth courses based on undergraduate numbers:
coursework and (for certain courses) based on examination. It is not uncommon for a student to place out of two breadth requirements.

- **Integration**: Students learn to integrate theory and method across sub-disciplines through specially-designed integrative courses and regular seminars involving the entire department.

**(Neuro)psychology, Linguistics, and Computational Approaches Track Requirements**

Courses may not be double-counted. Each course may only be used to satisfy a single degree requirement, even if it may qualify for more than one requirement.

### Breadth

**Cognitive Neuroscience**

One course

**Philosophy**

One course in philosophy of mind, language, or science

**Cognitive Psychology/Neuropsychology**

- AS.200.657 Advanced Statistical Methods (previously listed as AS.200.314; to be completed early in the program, preferably the first semester)
- AS.050.639 Cognitive Development (or an approved course/ seminar on a topic outside the area of language)
- or AS.050.31 Cognitive Neuropsychology of Visual Perception: The Malfunctioning Visual Brain

**Computation**

- AS.050.672 Foundations of Neural Network Theory
- AS.050.671 Bayesian Inference (or the equivalent, e.g., computational linguistics, or a Programming course such as C++, Java, etc.)

**Linguistics**

- AS.050.670 Mathematical Models of Language
- AS.050.617 Semantics I
- or AS.050.62 Syntax I
- or AS.050.62 Phonology I

**Integration**

- AS.050.626 Foundations of Cognitive Science
- AS.050.860 Professional Seminar in Cognitive Science (or AS.050.850 Departmental Seminar or other department-wide seminar explicitly offered in lieu of these)

**Depth: Area of Focus in Computation CogSci**

6-8 courses selected in conjunction with advisor(s) to achieve depth and expertise in CCS. Adviser may consult with Director of Graduate Studies. Below are some examples of courses that apply:

- AS.050.675 Probabilistic Models of the Visual Cortex
- EN.601.665 Natural Language Processing
- EN.601.769 Events Semantics in Theory and Practice
- EN.601.783 Vision as Bayesian Inference

**Research Ethics**

AS.360.625 Responsible Conduct of Research (encouraged to complete in first year)

**Teaching Assignments**

AS.050.849 Teaching Practicum (5 semesters. Students register for each term they are assigned to an instructor as a TA. Each instructor has a distinct Teaching Practicum section. Students are not generally expected to TA in their first semester or in the last two semesters of residency (5th year).)

**Computational Cognitive Science Track Requirements**

Courses may not be double-counted. Each course may only be used to satisfy a single degree requirement, even if it may qualify for more than one requirement.

### Breadth

3-4 courses in the Department of Cognitive Science that collectively develop sophistication in theoretical and (human) experimental approaches to cognitive science. At least one course must be in each language and vision.

- Language (at least 1 course)
- Vision (at least 1 course)

### Basic Computation

Three courses. Below are some examples of courses that apply:

- AS.050.670 Mathematical Models of Language
- AS.050.671 Bayesian Inference
- AS.050.672 Foundations of Neural Network Theory
- EN.601.675 Machine Learning
- EN.601.776 Machine Learning: Data to Models

### Integration

- AS.050.626 Foundations of Cognitive Science
- AS.050.860 Professional Seminar in Cognitive Science (or AS.050.850 Departmental Seminar or other department-wide seminar explicitly offered in lieu of these)

### Research Ethics

AS.360.625 Responsible Conduct of Research (encouraged to complete in first year)

### Depth: Area of Focus in Computation CogSci

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- EN.601.665 Natural Language Processing
- EN.601.769 Events Semantics in Theory and Practice
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### Teaching Assignments

AS.050.849 Teaching Practicum (5 semesters. Students register for each term they are assigned to an instructor as a TA. Each instructor has a distinct Teaching Practicum section. Students are not generally expected to TA in their first semester or in the last two semesters of residency (5th year).)

### Research Papers & Dissertation

Emphasis is placed on producing two research papers prior to writing a dissertation. These two research papers are typically presented at conferences and often lead to separate journal publications. Students are encouraged to incorporate the two research papers into their dissertation.
Nov. 1 (2nd year) First Research Paper*, completion of which typically marks achievement of an M.A. within the Ph.D. program. (Some additional coursework may be required to complete the MA.)

May 1 (3rd year) Second Research Paper*, completion of which signals readiness to discuss a career path with an adviser.

May 1 (4th year) Dissertation Proposal due detailing a significant research project and the methods to be used. Student must past oral defense.

Aug. 1 (5th year) Graduate Board Oral Exam defending a Ph.D. Dissertation that presents an original contribution to some area(s) of cognitive science in a format approaching publication standards.

* The two research papers must each employ a different research methodology within cognitive science, e.g., theoretical linguistics and psychology, supervised by two appropriate faculty members.

**Financial Support**

The department provides competitive levels of funding for Ph.D. students covering tuition and living expenses. Research expenses, including some support for travel to present papers at scholarly meetings, are also provided. If a student maintains an academic good standing, funding is extended up to five years of total support. Students are encouraged to apply for external graduate fellowship opportunities (NSF, NIH, DoD, etc.). As funded entities, our graduate students are expected to engage in full-time research during the summer months and the January intersession in addition to their regular coursework, TA responsibilities, and participation in academic departmental talks and events.

For current faculty and contact information go to http://cogsci.jhu.edu/people

**Faculty**

**Chair**

Géraldine Legendre
Professor: syntax, optimality theory, Romance and Balkan morphology and syntax, acquisition of syntax.

**Professors**

Barbara Landau
Dick and Lydia Todd Faculty Development Professor: language acquisition, cognitive development, spatial representation, acquisition of the lexicon.

Michael McCloskey
Professor: cognitive neuropsychology, vision, spatial and lexical representation, foundations of cognitive science.

Brenda Rapp
Professor: cognitive neuropsychology, spelling, spoken language production, spatial frames of reference, reading and neural bases of recovery of function.

Paul Smolensky
Krieger-Eisenhower Professor of Cognitive Science: grammatical theory, neural networks, optimality theory.

Alan Yuille
Bloomberg Distinguished Professor: computational models of vision, mathematical models of cognition, and artificial intelligence and neural networks.

**Associate Professors**

Kyle Rawlins
Associate Professor: natural language semantics and pragmatics, the syntax/semantics interface, syntax.

Colin Wilson
Associate Professor: theoretical phonology, experimental phonology, computational cognitive science.

**Assistant Professors**

Michael Bonner
Assistant Professor: cognitive neuroscience, computational neuroscience, vision, semantic memory, navigation, machine learning, artificial intelligence, neural networks, statistical modeling of neural representations.

Tal Linzen
Assistant Professor: human sentence comprehension, computational psycholinguistics.

**Professor Emeritus**

Luigi Burzio
theoretical phonology, morphology, and syntax, Romance linguistics.

**Secondary Appointments**

Marina Bedny
Assistant Professor (Psychological and Brain Sciences): brain development and plasticity, cognitive neuroscience, concepts.

Howard Egeth
Professor (Psychological and Brain Sciences): perception, attention, cognition, psychology, law.

Lisa Feigenson
Professor (Psychological and Brain Sciences): cognitive development, numerical cognition.

Charles Firestone
Assistant Professor (Psychological and Brain Sciences): how perception enables and incorporates sophisticated processing typically associated with higher-level cognition.

Jonathan Flombaum
Associate Professor (Psychological and Brain Sciences): visual perception, attention, cognition.

Steven Gross
Associate Professor (Philosophy): philosophy of language, philosophy of mind, metaphysics.

Justin Halberda
Professor (Psychological and Brain Sciences): cognitive development, reasoning, language acquisition.

**Joint Appointments**

Dana Boatman
Professor (Neurology and Otolaryngology, School of Medicine): speech perception, auditory processing disorders, auditory neurophysiology.

John Desmond
Professor (Neurology, School of Medicine): neuroimaging, transcranial magnetic stimulation methods to investigate neural correlates of behavior.

Jason Eisner
Professor (Computer Science, Whiting School of Engineering): computational linguistics (syntax and phonology), natural language processing, statistical machine learning, programming language design.

Barry Gordon
Professor of Therapeutic Cognitive Neuroscience (Neurology, School of Medicine): cognitive neuroscience, cognitive neuroscience, language, aphasia, memory, amnesia and memory disorders, autism, computational models of cognition, and cognitive disorders.

Argye Hillis-Trupe
Professor (Neurology, School of Medicine): language impairments in acute stroke, hemi-spatial neglect after stroke, relationship between cognitive impairments and regions of hypoperfused brain.

Nazbanou "Bonnie" Nozari
Assistant Professor (Neurology, School of Medicine): monitoring and metacognitive processes over language, selective attention in language production, computational models of language production, aphasia.

Kyriana Tsapkini
Assistant Professor (Neurology, School of Medicine): language—combining cognitive science, psychology, neural science approaches.

Benjamin Van Durme
Assistant Research Professor (Computer Science, Whiting School of Engineering; Senior Research Scientist, Human Language Technology Center of Excellence): natural language processing, specifically semantics; streaming/randomized algorithms.

Lecturer
Julia Yarmolinskyaya
Lecturer (Center for Language Education): perception and acquisition of second language phonology.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.050.101. Cognition. 3.0 Credits.
Introductory course exploring the study of human mental processes within the field of cognitive science. Drawing upon cognitive psychology, cognitive neuropsychology, cognitive neuroscience, linguistics, and artificial intelligence, the course examines theory, methods, and major findings in work on vision, reasoning, and language.

Instructor(s): T. Linzen
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.102. Language and Mind. 3.0 Credits.
Introductory course dealing with theory, methods, and current research topics in the study of language as a component of the mind. What it is to "know" a language: components of linguistic knowledge (phonetics, phonology, morphology, syntax, semantics) and the course of language acquisition. How linguistic knowledge is put to use: language and the brain and linguistic processing in various domains. Cross-listed with Neuroscience and Psychology.

Instructor(s): C. Wilson
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.105. Introduction to Cognitive Neuropsychology. 3.0 Credits.
When the brain is damaged or fails to develop normally, even the most basic cognitive abilities (such as the ability to understand words, or perceive objects) may be disrupted, often in remarkable ways. This course explores a wide range of cognitive deficits, focusing on what these deficits can tell us about how the normal brain works. Topics include brain anatomy and causes of brain damage, reading and spelling deficits, unilateral spatial neglect, hemispheric disconnection, cortical plasticity, and visual perception of location and orientation. Students read primary sources: journal articles that report deficits and discuss their implications.

Instructor(s): M. McCloskey
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.107. Language and Advertising. 3.0 Credits.
Advertising pervades our culture; interactions with advertising are an unavoidable fact of modern life. This class uses tools from linguistics and cognitive science to analyze these interactions, and understand the impact of advertising on its viewers. A central theme is to treat ads as communicative acts, and explore the consequences -- what can theories of communication (from linguistics, psychology, and philosophy) tell us about ads? How do ads use central features of human cognition to accomplish their aims? Do ads manipulate, and if so, how successfully? The theories of communication we explore include Gricean pragmatics, theories of speech acts, linguistic theories of presuppositions, and more. Students will collect, analyze, and discuss advertisements in all mediums.

Instructor(s): K. Rawlins
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.128. Freshmen Seminar: Born to Talk: Language in the Human Mind. 3.0 Credits.
Human infants learn their native language in less than 5 years with no direct teaching from adults. This mysterious fact is the basis of the modern study of language as a cognitive and computational system. In this seminar we will review major findings about how children learn the sound system, words, and grammar of their first language, focusing on how the evidence reveals the role of biological structures and environmental influences on language development. Weekly readings will include summary texts, original research articles, and coverage of language science in the popular media. Although language development is a topic of real importance to parents, educators, and policy-makers, it is often difficult to disseminate findings in a way that the public can understand. In weekly writing assignments, students will practice "translating" scientific reasoning for a general audience. Freshman Seminar

Instructor(s): S. Lewis
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.202. Introduction to Computational Cognitive Science. 3.0 Credits.
This course is an introduction to computational approaches to the study of the mind. The approaches discussed include symbolic structured representations, probabilistic inference and artificial neural networks, as applied to concept learning, language and reasoning. Some programming experience (e.g., AS 250.205.01 Introduction to Computing or equivalent) and mathematical preparation (e.g., AS.110.107 Calculus II or equivalent) are highly recommended.

Instructor(s): T. Linzen
Area: Quantitative and Mathematical Sciences.
AS.050.203. Cognitive Neuroscience: Exploring the Living Brain. 3.0 Credits.
This course surveys theory and research concerning how mental processes are carried out by the human brain. Currently a wide range of methods of probing the functioning brain are yielding insights into the nature of the relation between mental and neural events. Emphasis will be placed on developing an understanding of both the physiological bases of the techniques and the issues involved in relating measures of brain activity to cognitive functioning. Methods surveyed include electrophysiological recording techniques such as EEG, ERP, single/multiple unit recording and MEG; functional imaging techniques such as PET and fMRI; and methods that involve lesioning or disrupting neural activity such as cortical stimulation, animal lesion studies, and the study of brain-damaged individuals. (Co-listed as AS.080.203 in Neuroscience.) It's strongly recommended that students have background in one of the following courses: AS.050.101 OR AS.050.105 OR AS.200.141.
Instructor(s): Staff
Area: Natural Sciences, Social and Behavioral Sciences.
AS.050.206. Bilingualism. 3.0 Credits.
Do children get confused when they grow up exposed to more than one language? Is it possible to forget one’s native language? Are the first and second language processed in different areas of the brain? How does brain damage impact the different languages of a polyglot? Does knowing a second language affect non-linguistic cognitive processing? This course will address questions such as these through an exploration of mental and neural processes underlying bilingual and multilingual language processing.
Instructor(s): J. Yarmolinskaya
Area: Natural Sciences, Social and Behavioral Sciences.
AS.050.235. Theory of Mind and the Development of Language. 1.0 Credit.
The course offers an overview of recent research on language and social cognition. It focuses on Theory of Mind (ToM) and the development of language. Theory of Mind is the ability to attribute mental states to oneself and others and to understand that others have beliefs, desires, and intentions that are different from one’s own. The development of human language is closely related to the development of ToM.
Instructor(s): A. Tamm
Area: Natural Sciences, Social and Behavioral Sciences.
AS.050.240. World of Language. 3.0 Credits.
This hands-on course exposes students to the fascinating variety – and uniformity – to be found among the world’s 6000 languages through group lectures on a variety of topics as well as actual linguistic fieldwork conducted in small groups with a native speaker of a language unknown to the participants. This course is a good preparation for upper-division linguistics courses.
Instructor(s): G. Legendre
Area: Natural Sciences, Social and Behavioral Sciences.
AS.050.312. Cognitive Neuroimaging Methods in High-Level Vision. 3.0 Credits.
This course is an advanced seminar and research practicum course. It will provide the opportunity to learn about fMRI methods used in the field of vision science and for students to have hands-on experience to develop, design and analyze a research study on topics in the cognitive neuroscience field of high-level vision. In the first part of the course students will read recent fMRI journal papers and learn about common fMRI designs and analysis methods; in the second part of the course students will conduct a research study as a group to address a research question developed from readings. Students are expected to write a paper in a journal article format at the end of the course and to present their results in front of the class. Research topics will vary but with special focus on topics in object, scene and space recognition. Cross-listed with Neuroscience and Psychology. instructor’s permission required.
Instructor(s): S. Park
Area: Natural Sciences, Social and Behavioral Sciences.
When we think about our ability to see, we tend to think about our eyes, but in fact vision happens mostly in the brain. This course explores the remarkable perceptual deficits that occur when the visual regions of the brain are damaged or fail to develop normally, focusing on what these perceptual malfunctions tell us about normal visual perception. Topics include visual system anatomy and physiology; functional specialization in the lower visual system as revealed by cerebral achromatopsia (color blindness resulting from brain damage) and akinetopsia (impairment of motion perception); cortical plasticity in the visual system; spatial deficits in perception and action; and the implications of high-level visual deficits, including prosopagnosia (impaired face recognition), Charles Bonnet syndrome (complex visual hallucinations in blind areas of the visual field), blindsight (accurate responding to visual stimuli despite apparent inability to see them), and Anton’s syndrome (denial of blindness).
Prerequisites: AS.050.105 OR AS.050.203 OR AS.080.203 OR AS.050.101 OR AS.200.110 OR AS.200.211 or instructor's permission.
Instructor(s): M. McCloskey
Area: Natural Sciences, Social and Behavioral Sciences.
AS.050.317. Semantics I. 3.0 Credits.
This is an introduction to the study of meaning in natural language. We address the conceptual and empirical issues in semantic theory and introduce some formal machinery that has been developed to deal with such problems. After discussing foundational questions, we turn to formal semantics and pragmatics, as well as their interfaces with syntax and the lexicon. Specific topics include presupposition, type-driven composition, quantification, lexical aspect, argument structure, and lexical representations of meaning.
Prerequisites: AS.050.107 OR AS.050.102 or instructor's permission.
Instructor(s): K. Rawlins
Area: Natural Sciences, Social and Behavioral Sciences.
AS.050.318. Practicum in Language Disorders- Community Based Learning. 2.0 Credits.
This course provides the opportunity to learn about adult aphasias, language disorders which are one of the most common consequences of stroke. You will receive training in supportive communication techniques and work as a communication partner with an individual with aphasia for two hours per week. Three class meetings for orientation and reading assignments will be held on campus; training and practicum will be conducted at a local aphasia support center. Independent mode of transportation required. Co-listed as AS.080.400 in Neuroscience. Additional information can be found on the Department of Neuroscience's website: http://krieger.jhu.edu/neuroscience/academics/practicums/practicum-in-language-disorders. Interested students should contact the instructor. Find out more about the practicum site at http://www.scalebaltimore.org.
Prerequisites: A- or Better in AS.050.105 OR AS.050.203 OR AS.080.203 OR AS.050.311 or instructor's permission.
Instructor(s): B. Rapp
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.320. Syntax I. 3.0 Credits.
Introduces the basic methods and means of analysis used in contemporary syntax investigations, practicing with data from different languages. Also offered as AS.050.620.
Prerequisites: AS.050.102 OR AS.050.240 or equivalent/see instructor.
Instructor(s): G. Legendre
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.325. Phonology I. 3.0 Credits.
An introduction to the basic principles underlying the mental representation and manipulation of language sounds and their relation to human perception and vocal articulation: how units of sound are both decomposable into elementary features and combined to form larger structures like syllables and words. The role of rules and constraints in a formal theory of phonological competence and in accounting for the range of variation among the world’s languages. Also offered as AS.050.625.
Instructor(s): C. Wilson
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.326. Foundations of Cognitive Science. 3.0 Credits.
This course explores general issues and methodologies in cognitive science through the reading of classic works (from Plato and Kant through Skinner and Turing) and recent research articles to begin construction of a coherent picture of many seemingly divergent perspectives on the mind/brain. Recent brain-based computational models serve to focus discussion. Also offered as AS.050.626.
Instructor(s): P. Smolensky
Area: Natural Sciences, Social and Behavioral Sciences Writing Intensive.

AS.050.332. Developmental Cognitive Neuroscience. 3.0 Credits.
In-depth examination of the current literature on cognitive development in the context of developmental cognitive neuroscience. Please see course prerequisites. Meets with AS.050.632.
Prerequisites: AS.050.101 OR AS.050.339 OR AS.200.132 OR AS.050.105 OR Instructor's Permission.
Instructor(s): B. Landau
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.333. Psycholinguistics. 3.0 Credits.
This course provides a broad survey of current research on language processing in adult native speakers and language learners. Topics include speech perception, word recognition, and sentence production and comprehension. We will discuss the nature of representations that are being constructed in real-time language use, as well as how the mental procedures for constructing linguistic representations could be studied by various behavioral and physiological measures. Also offered as AS.050.633.
Prerequisites: AS.050.102 OR AS.050.240 OR AS.050.317 OR AS.050.320 OR AS.050.325 or instructor's permission.
Instructor(s): E. Atkinson
Area: Natural Sciences, Social and Behavioral Sciences Writing Intensive.

AS.050.339. Cognitive Development. 3.0 Credits.
This is a survey course in developmental psychology designed for individuals with some basic background in psychology or cognitive science, but little or none in development. The course is strongly theoretically oriented, with emphasis on issues of nature, and development psychology as well as relevant empirical evidence. The principle focus will be early development, i.e., from conception through middle childhood. The course is organized topically, covering biological and prenatal development, perceptual and cognitive development, the nature and development of intelligence, and language learning.
Instructor(s): J. Yarmolinskiy
Area: Natural Sciences, Social and Behavioral Sciences.

Neuroimaging provides a fascinating, versatile window into how the brain instantiates the mind. In this class will survey both structural and functional neuroimaging techniques. This course will be a small-classroom, computer-based lab course. Each meeting will be a mix of lecture and hands-on exercises. This is an exciting time to learn about the current state of neuroimaging, and this course will be well suited for the beginner who is merely curious as well as for well initiated who are eager to explore further ways to study the mind via neuroimaging.
Prerequisites: (AS.050.203 OR AS.080.203 OR AS.050.101 OR AS.050.105 OR AS.200.141 AND (EN.550.111 OR EN.550.211 OR AS.230.205 OR EN.550.230 OR EN.550.131) OR EN.550.311 OR EN.550.420 OR EN.550.413 OR AS.280.345 OR AS.200.314 OR EN.560.348)
Instructor(s): J. Purcell
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.344. Writing Matters: Written Language and the Brain. 3.0 Credits.
Written language is undoubtedly one of humanity’s greatest inventions, providing the basis for most all other human innovations. What are the capacities of the human mind that enable written language? How does literacy change the brain? Do differences in writing systems affect how humans learn and process written language? These and other questions will be addressed by examining evidence from experimental studies of individuals with typical written language processing, as well as neuropsychological studies of brain-injured individuals. Throughout the course you will build and revise a cognitive architecture, a theory of how humans process written language, based on the current understanding of the cognitive and neural bases of literacy.
Prerequisites: AS.050.101 OR AS.050.105 OR AS.050.203 OR AS.080.203 OR AS.200.141 or instructor's permission.
Instructor(s): R. Wiley
Area: Natural Sciences, Social and Behavioral Sciences.
**AS.050.345. Cognitive and Neural Basis of Executive Control. 3.0 Credits.**
This course discusses the concept of executive control, a general class of functions that support more specialized cognitive operations such as language and problem solving, and their neural underpinning. Discussion will include classification of executive functions, relationship to working memory, domain-generality or specificity of executive control functions, and experimental, neural, and computational approaches to exploring components of executive control, with a special emphasis on the role of cognitive control in the processing of language. The goal of this course is two-fold: to teach students the basic knowledge regarding cognitive and neural mechanisms of executive control, and more importantly to encourage them to put that knowledge to use by asking them to think critically about the readings, to participate in interactive discussions with questions they bring in each week based on the readings assigned for that week, and finally to propose one well thought-out question at the end of the semester and to write a short proposal on how to explore that question. As such, the course puts little emphasis on memorization and a strong emphasis on analytical abilities and integration.

**Prerequisites:** AS.200.207(C) OR AS.050.333(C) OR EN.550.111(C)
**Instructor(s):** N. Nozari
**Area:** Natural Sciences, Social and Behavioral Sciences.

**AS.050.346. Decoding the Brain: Multivariate Analysis in Cognitive Neuroscience. 3.0 Credits.**
Neural decoding through Machine Learning has become an ever-important tool for neuroscientists to understand how the brain processes information. This course introduces students to this exciting field by combining seminar style lectures and hands-on practice sessions. The course will be organized around a number of corner-stone applications in cognitive neuroscience, including face recognition, neural representation of word meaning, decoding mental states. During the practice sessions, students will learn to replicate the published findings with off-the-shelf software (prior programming knowledge could be helpful but not required). By the end of the course, the students will be familiar with the principal methods and applications of neural decoding, and will acquire hands-on experience and practical skills of data analysis.

**Prerequisites:** EN.553.111 OR EN.553.112 OR EN.550.111 OR EN.550.112 OR equivalent.
**Instructor(s):** Y. Tao
**Area:** Natural Sciences, Social and Behavioral Sciences.

**AS.050.345. Mathematical Models of Language. 3.0 Credits.**
This course will be devoted to the study of formal systems that have proven useful in the cognitive science of language. We will discuss a wide range of mathematical structures and techniques and demonstrate their applications in theories of grammatical competence and performance. A major goal of this course is bringing students to a point where they can evaluate the strengths and weaknesses of existing formal theories of cognitive capacities, as well as profitably engage in such formalization, constructing precise and coherent definitions and rigorous proofs. Also offered as AS.050.670.
**Instructor(s):** K. Rawlins
**Area:** Natural Sciences, Social and Behavioral Sciences.

**AS.050.371. Bayesian Inference. 3.0 Credits.**
This course introduces techniques for computational modeling of aspects of human cognition, including perception, categorization, and induction. Possible topics include maximum likelihood and Bayesian inference, structured statistical models (including hierarchical and graphical models), nonparametric models. The course emphasizes the close connections among data analysis, theory development, and modeling, with examples drawn from language and vision. Also offered as AS.050.671.
**Instructor(s):** C. Wilson
**Area:** Natural Sciences, Social and Behavioral Sciences.

**AS.050.372. Foundations of Neural Network Theory. 4.0 Credits.**
**Introduction to continuous mathematics for cognitive science, with applications to biological and cognitive network models: real and complex numbers, differential and integral multi-variable calculus, linear algebra, dynamical systems, numerical optimization. Meets with AS.050.672.
**Prerequisites:** AS.110.106 OR AS.110.108
**Instructor(s):** P. Smolensky
**Area:** Natural Sciences, Quantitative and Mathematical Sciences.

**AS.050.373. Neural-Network Modeling of Learning, Language and Cognition. 3.0 Credits.**
Connectionism is an approach to Artificial Intelligence computation inspired by how the brain, a network of neurons, works. A connectionist model (or artificial neural network) is a collection of simple processing units that are massively interconnected with each other, and that represents knowledge in its connection pattern. Each processing unit has highly limited computational power but the collection of units as a whole has great computational power (as strong as the Turing machine). Connectionist models have been used to study diverse aspects of human cognition: attention, pattern recognition, memory, categorization, language processing, learning, and decision making. In this seminar, students will learn important concepts, principles, algorithms, and practical skills in connectionist modeling by actually doing connectionist modeling. Students will first play with toy problems to learn various types of connectionist modeling techniques, and will then carry out a team research project. In addition to practical skills, students will learn to be explicit about their assumptions and reasoning when making their (conceptual or implemented) models and to make new observable predictions that can be tested in experiments.
**Recommended Course Background:** Experience with some programming language. Exemptions can be made by seeking instructor’s permission.
**Instructor(s):** P. Cho
**Area:** Natural Sciences, Quantitative and Mathematical Sciences.
AS.050.375. Probabilistic Models of the Visual Cortex. 3.0 Credits.
The course gives an introduction to computational models of the
mammalian visual cortex. It covers topics in low-, mid-, and high-
level vision. It briefly discusses the relevant evidence from anatomy,
electrophysiology, imaging (e.g., fMRI), and psychophysics. It
concentrates on mathematical modeling of these phenomena taking into
account recent progress in probabilistic models of computer vision and
developments in machine learning, such as deep networks.
Prerequisites: AS.110.106 OR AS.110.108
Instructor(s): A. Yuille
Area: Quantitative and Mathematical Sciences.

AS.050.501. Readings in Cognitive Science/Freshmen. 3.0 Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.502. Readings in Cognitive Science-Freshmen. 3.0 Credits.
Permission Required.
Instructor(s): Staff.

AS.050.503. Research in Cognitive Science/Freshmen. 3.0 Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.504. Research Cognitive Science-Freshmen. 0.0 - 3.0 Credits.
Permission Required.
Instructor(s): Staff.

AS.050.505. Readings in Cognitive Science/Sophomores. 1.0 - 3.0
Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.506. Readings Cognitive Science-Sophomores. 0.0 - 3.0 Credits.
Permission Required.
Instructor(s): Staff.

AS.050.507. Research in Cognitive Science/Sophomores. 3.0 Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.508. Research Cognitive Science - Sophomores. 0.0 - 3.0 Credits.
Permission Required.
Instructor(s): Staff.

AS.050.509. Cognitive Science Internship. 1.0 Credit.
Research current topics in cognitive science.
Instructor(s): B. Rapp.

AS.050.511. Readings in Cognitive Science/Juniors. 3.0 Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.512. Readings Cognitive Science-Juniors. 0.0 - 3.0 Credits.
Permission Required.
Instructor(s): Staff.

AS.050.513. Research in Cognitive Science/Juniors. 0.0 - 3.0 Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.514. Research Cognitive Science - Juniors. 0.0 - 3.0 Credits.
Permission Required,
Instructor(s): Staff.

AS.050.515. Readings in Cognitive Science/Seniors. 3.0 Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.516. Readings Cognitive Science - Senior. 0.0 - 3.0 Credits.
Permission Required.
Instructor(s): Staff.

AS.050.517. Research in Cognitive Science/Seniors. 3.0 Credits.
Research current topics in cognitive science.
Instructor(s): Staff.

AS.050.518. Research Cognitive Science - Seniors. 0.0 - 3.0 Credits.
Permission Required.
Instructor(s): Staff.

AS.050.599. Research-Cognitive Science. 0.0 - 3.0 Credits.
Instructor(s): Staff.

Instructor’s permission required. (Also offered as AS.050.312.)
Instructor(s): S. Park
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.617. Semantics I.
Also offered as AS.050.317. This is an introduction to the study of
meaning in natural language. We address the conceptual and empirical
issues in semantic theory and introduce some formal machinery that
has been developed to deal with such problems. After discussing
foundational questions, we turn to formal semantics and pragmatics,
as well as their interfaces with syntax and the lexicon. Specific topics
include presupposition, type-driven composition, quantification, lexical
aspect, argument structure, and lexical representations of meaning.
Instructor(s): K. Rawlins
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.620. Syntax I.
Also offered as AS.050.320.
Instructor(s): G. Legendre.

AS.050.622. Semantics II.
Co-taught with AS.050.322. This course extends the material in
AS.050.317 to cover advanced but central topics in semantic and
pragmatic theory, focusing on intensional semantics (especially possible
world semantics and situation semantics). Empirical domains of interest
in this class include modality, tense, grammatical aspect, conditionals,
attitude and speech reports, questions, and free choice phenomena.
Three core theoretical issues addressed in this class are the nature of
a compositional account of the above intensional phenomena, the
representations of possibilities involved, and the role of the syntax/
semantics/pragmatics interface in such an account.
Prerequisites: AS.050.617
Instructor(s): K. Rawlins
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.625. Phonology I.
Also offered as AS.050.325. An introduction to the basic principles
underlying the mental representation and manipulation of language
sounds and their relation to human perception and vocal articulation:
how units of sound are both decomposable into elementary features and
combined to form larger structures like syllables and words. The role of
rules and constraints in a formal theory of phonological competence and
in accounting for the range of variation among the world's languages.
Instructor(s): C. Wilson
Area: Natural Sciences, Social and Behavioral Sciences.
**AS.050.626. Foundations of Cognitive Science.**
Also offered as AS.050.326. This course explores general issues and methodologies in cognitive science through the reading of classic works (from Plato and Kant through Skinner and Turing) and recent research articles to begin construction of a coherent picture of many seemingly divergent perspectives on the mind/brain. Recent brain-based computational models serve to focus discussion.

Instructor(s): P. Smolensky
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

**AS.050.632. Developmental Cognitive Neuroscience.**
Also offered as AS.050.332. See description. In-depth examination of the current literature on cognitive development in the context of developmental cognitive neuroscience.

Instructor(s): B. Landau.

**AS.050.633. Psycholinguistics.**
Also offered as AS.050.333. This course provides a broad survey of current research on language processing in adult native speakers and language learners. Topics include speech perception, word recognition, and sentence production and comprehension. We will discuss the nature of representations that are being constructed in real-time language use, as well as how the mental procedures for constructing linguistic representations could be studied by various behavioral and physiological measures.

Instructor(s): E. Atkinson
Writing Intensive.

**AS.050.639. Cognitive Development.**
Also offered as AS.050.339. This is a survey course in developmental psychology designed for individuals with some basic background in psychology or cognitive science, but little or none in development. The course is strongly theoretically oriented, with emphasis on issues of nature, and development psychology as well as relevant empirical evidence. The principle focus will be early development, i.e., from conception through middle childhood. The course is organized topically, covering biological and prenatal development, perceptual and cognitive development, the nature and development of intelligence, and language learning.

Instructor(s): J. Yarmolinskaya.

**AS.050.645. Cognitive and Neural Basis of Executive Control.**
Also offered as AS.050.345. This course discusses the concept of executive control, a general class of functions that support more specialized cognitive operations such as language and problem solving, and their neural underpinning. Discussion will include classification of executive functions, relationship to working memory, domain-generality or specificity of executive control functions, and experimental, neural, and computational approaches to exploring components of executive control, with a special emphasis on the role of cognitive control in the processing of language. The goal of this course is two-fold: to teach students the basic knowledge regarding cognitive and neural mechanisms of executive control, and more importantly to encourage them to put that knowledge to use by asking them to think critically about the readings, to participate in interactive discussions with questions they bring in each week based on the readings assigned for that week, and finally to propose one well thought-out question at the end of the semester and to write a short proposal on how to explore that question. As such, the course puts little emphasis on memorization and a strong emphasis on analytical abilities and integration.

Instructor(s): N. Nozari.

**AS.050.658. Language & Thought.**
Have you ever wondered about the relationships between language and thought? Philosophers, linguists, psychologists, evolutionary theorists and cognitive scientists have too and this course will survey the current thinking on this matter. Classical papers such as those by Whorf and Sapir, more recent philosophical papers by people such as Fodor and Dennett, and recent empirical work by linguists and psycholingists on the relationship between language and thinking in development and in adults will be covered. Discussions will focus on the theoretically possible relationships between language and thought and the empirical data that speak to these.

Instructor(s): B. Landau.

**AS.050.670. Mathematical Models of Language.**
Also offered as AS.050.370. This course will be devoted to the study of formal systems that have proven useful in the cognitive science of language. We will discuss a wide range of mathematical structures and techniques and demonstrate their applications in theories of grammatical competence and performance. A major goal of this course is bringing students to a point where they can evaluate the strengths and weaknesses of existing formal theories of cognitive capacities, as well as profitably engage in such formalization, constructing precise and coherent definitions and rigorous proofs.

Instructor(s): K. Rawlins
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.050.671. Bayesian Inference.**
Also offered as AS.050.371. This course introduces techniques for computational modeling of aspects of human cognition, including perception, categorization, and induction. Possible topics include maximum likelihood and Bayesian inference, structured statistical models (including hierarchical and graphical models), nonparametric models. The course emphasizes the close connections among data analysis, theory development, and modeling, with examples drawn from language and vision.

Instructor(s): C. Wilson
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.050.672. Foundations of Neural Network Theory.**
Also offered as AS.050.372. Introduction to continuous mathematics for biological and cognitive network models: real and complex numbers, differential and integral multi-variable calculus, linear algebra, dynamical systems, numerical optimization.

Instructor(s): P. Smolensky.

**AS.050.675. Probabilistic Models of the Visual Cortex.**
The course gives an introduction to computational models of the mammalian visual cortex. It covers topics in low-, mid-, and high-level vision. It briefly discusses the relevant evidence from anatomy, electrophysiology, imaging (e.g., fMRI), and psychophysics. It concentrates on mathematical modelling of these phenomena taking into account recent progress in probabilistic models of computer vision and developments in machine learning, such as deep networks. Also offered as AS.050.375. Co-listed with Computer Science as EN.601.485.

Instructor(s): A. Yuille.

**AS.050.690. Directed Readings in Cognitive Science.**
Directed readings on current topics in cognitive science. Instructor approval required.

Instructor(s): Staff.

**AS.050.800. Directed Readings.**
Guided independent readings in special fields of cognitive science.

Instructor(s): P. Smolensky.
Participants in this graduate seminar will read and discuss current research articles in cognitive neuropsychology of vision or language, and present their own research.
Instructor(s): M. McCloskey.

Permission required. Current issues and ongoing research on human cognition are discussed.
Instructor(s): B. Rapp.

A specialized research seminar for individuals researching language acquisition, cognitive development and the interface between language and cognition. Students must actively carry out empirical or theoretical research in these areas. Permission required.
Instructor(s): B. Landau.

AS.050.814. Research Seminar in Computer Vision.
This course covers advanced topics in computational vision. It discusses and reviews recent progress and technical advances in visual topics such as object recognition, scene understanding, and image parsing.
Instructor(s): A. Yuille.

Instructor(s): K. Rawlins.

Participants in this graduate seminar will read and discuss current research articles in language development and present their own research. Permission required.
Instructor(s): G. Legendre.

Discussion of current computational and experimental research on human language processing.
Instructor(s): T. Linzen.

A critical analysis of current issues and debates in theoretical syntax. Discussion of on-going research.
Instructor(s): G. Legendre.

AS.050.825. Research Seminar in Optimality Theory.
A specialized research seminar on constraint based theories of human language, including Optimality Theory, Harmonic Grammar, and Maximum Entropy models.
Instructor(s): G. Legendre.

Readings and research presentations on varying topics in mathematics, computation, and formal linguistics with bearing on cognitive science.
Instructor(s): C. Wilson.

AS.050.827. Research Seminar in Language Acquisition.
Focus is on current research in acquisition of syntax.
Instructor(s): G. Legendre.

This seminar will read on-going and recent papers on the cognitive neuroscience research of vision. Permission required.
Instructor(s): S. Park.

Topics range from mathematical analysis of neural networks to computational studies of linguistic structure. Focus is ongoing research and current literature.
Instructor(s): P. Smolensky.

AS.050.832. Research In Language Processes.
Current Topics in Human Language Processing, with discussion of recent developments in theory and experimental study. Permission required.
Instructor(s): A. Omaki.

Current topics in any area of cognitive science, including language and vision, with discussion of recent developments in theory, experimental study, and computational modeling.
Instructor(s): Staff.

AS.050.849. Teaching Practicum.
Permission required. Essential for Teaching Assistants.
Instructor(s): Staff.

Instructor permission required. Addresses professional issues such as research ethics, success on the job market and in an academic career, teaching and mentoring and differing professional standards in the sub-disciplines of cognitive science.
Instructor(s): G. Legendre.

Independent study. Intended for graduate students who have completed all degree requirements except for their dissertation but must remain or return to residency status in order to fulfill other obligations. Advisor or department approval required
Instructor(s): Staff.

Cross Listed Courses
Neuroscience
AS.080.203. Neuroscience: Cognitive. 3.0 Credits.
This course surveys theory and research concerning how the human brain carries out mental processes. The sections of this course correspond with the sections listed for AS.020.203. All sections will meet together on exams day and guest lecture days. Co-listed as AS.050.203 in Cognitive Science. It's strongly recommended that students have background in one of the following courses: AS.050.101 OR AS.050.105 OR AS.200.141.
Instructor(s): Staff
Area: Natural Sciences, Social and Behavioral Sciences.

AS.080.320. The Auditory System. 3.0 Credits.
This course will cover the neuroanatomy and neuropsychology of the human auditory system from the ear to the brain. Behavioral, electrophysiological, and neuroimaging methods for assessing peripheral and central auditory function will be discussed. Acquired and developmental disorders of auditory function will be reviewed using clinical case studies.
Prerequisites: AS.080.305 OR AS.080.203 OR AS.050.203 OR AS.200.141 OR AS.020.312 or permission of the instructor.
Instructor(s): D. Boatman
Area: Natural Sciences.
Psychological Brain Sciences

AS.200.336. Foundations of Mind. 4.0 Credits.
An interdisciplinary investigation into the innateness of concepts: perception, number, language, and morality, physics discussed. Evidence from animals, infants, patients, brains. Students collect data in sections investigating claims from the readings. Cross-listed with Cognitive Science and Philosophy.
Instructor(s): J. Halberda; L. Feigenson
Area: Social and Behavioral Sciences.

Music

AS.376.371. Introduction to Music Cognition. 3.0 Credits.
What underlies our aesthetic response to music? How and why are we able to identify certain sounds as music? To what extent are music and natural language similar? What is it about music that evokes such powerful emotions such as happiness and sadness? What is unique to musical creativity? Examining such questions from cognitive science, neuroscience, psychology, and philosophical perspectives, this course explores relevant research and theory in the emerging domain of music perception and cognition. Students will complete a final research paper on the topic of their choice that integrates the course material.
Instructor(s): M. Lopez-Gonzalez
Area: Natural Sciences, Social and Behavioral Sciences.

AS.376.372. Topics in Music Cognition. 3.0 Credits.
This course explores the similarities and differences between music and language, the effects of musical training on cognitive development, and the expressive power of music, with an introduction to music and its role in film. We will read relevant research and theory on these topics from cognitive science, neuroscience, psychology, musicology, and philosophical perspectives.
Instructor(s): M. Lopez-Gonzalez
Area: Natural Sciences, Social and Behavioral Sciences.

Computer Science

EN.601.769. Events Semantics in Theory and Practice. 3.0 Credits.
This course explores selected topics in the nature of event representations from the perspective of cognitive science, computer science, linguistics, and philosophy. These fields have developed a rich array of scientific theories about the representation of events, and how humans make inferences about them -- we investigate how (and if) such theories could be applied to current research topics and tasks in computational semantics such as inference from text, automated summarization, veridicality assessment, and so on. In addition to classic articles dealing with formal semantic theories, the course considers available machine-readable corpora, ontologies, and related resources that bear on event structure, such as WordNet, PropBank, FrameNet, etc.
The course is aimed to marry theory with practice: students with either a computational or linguistic background are encouraged to participate.
[Applications]
Instructor(s): B. Van Durme; K. Rawlins.

Comparative Thought and Literature

http://compthoughtlit.jhu.edu/
The faculty of the Department of Comparative Thought and Literature shares an ongoing commitment to questions at the intersection of literature, philosophy, and aesthetics. Central to these concerns is the analysis of literary and philosophical texts, ranging across a set of diverse traditions, genres, and languages, in juxtaposition to ethics, religion, history, art history, anthropology, media studies, political theory, and the natural sciences. Questions of literary theory, the history and value of literature, and the constitution and development of philosophical and literary forms in a global context are similarly at the forefront of the department’s research and teaching.
The department’s interdisciplinary nature is one of its main strengths and provides crucial common ground for scholars from humanities departments across the university. Faculty members work in a variety of fields but are unified by a common investment in intellectual curiosity, flexibility, open-mindedness, and careful reading and criticism. Graduate students are encouraged to undertake projects addressing authentic philosophical or theoretical problems without the restriction of disciplinary conventions. Students may also cultivate strong ties with faculty in other departments working in their areas of interest.
Every year, the department hosts at least two associates, who are faculty members from other institutions that stay for an extended period to present lectures, give seminars, and interact with faculty and students. Previous and current associates include many distinguished scholars, such as Anita LaFrance Allen, Susan James, Barbara Cassin, David Wellbery, Robert Pippin, Jean-Luc Marion, Eli Friedlander, Sari Nusseibeh, and Toril Moi.

History

In the mid-20th century, the department, which was then known as the Humanities Center, was established as a meeting ground for the various humanities departments. With Charles Singleton as its first director, the center aimed to strengthen the humanities at Johns Hopkins and provide a place where scholars could engage in theoretical reflections on the human sciences, including recent European movements such as structuralist thought and literary hermeneutics.
The department’s first full academic year was 1966–67, and from the outset, its founders sought to establish a focal site for structuralism in the U.S., based on the model of the “sixième section” of the École Pratique des Hautes Études in Paris or the Institut für Sozialforschung at the University of Frankfurt. The conference held in the fall of its inaugural year, “The Languages of Criticism and the Sciences of Man: The Structural Controversy” brought many of the leading figures of European thought together in the U.S. and continues to be cited as both the substantial introduction of structuralist thought into the American academy and an important moment of transition between structuralism and post-structuralism. This model of exchange and innovation continued into the 21st century with a robust program of visiting scholars, professors, and lecturers.
As of January 1, 2018, the name of the Humanities Center has been changed to Department of Comparative Thought and Literature. The new name recognizes the department’s ongoing commitment to serious interdisciplinary study, with a focus on questions at the intersection of literature, philosophy, and aesthetics. It also represents the various literatures, philosophies, religions, political systems, cultures, and methodologies that its faculty studies and applies. A search is currently underway to fill the Boone Chair in the newly named department.
The department offers several courses taught by its faculty. These courses provide a broad introduction to the documents and thought of Western culture for all students, from those interested in a general liberal arts preparation to those in one of the university’s pre-professional programs.
For qualified juniors and seniors preparing for graduate school, the department also offers the opportunity to pursue an independent and often interdisciplinary research project through the Honors Program (http://compthoughtlit.jhu.edu/undergraduate/honors-program).
The Department of Comparative Thought and Literature does not offer a departmental major or minor. Students who wish to concentrate on the courses that it offers should consider a major in another humanities department.

**Honors Program in the Humanities**

Initiated in 1976, the Honors Program in the Humanities offers all qualified undergraduates the possibility to pursue an independent and often interdisciplinary research project, normally in their junior and senior years. Students can propose a topic in any humanistic discipline, including intellectual or cultural history, English and comparative literatures, women and gender studies, minority literatures and culture, film studies, anthropology, philosophy, etc. Past topics have also examined points of intersection between the arts and sciences, giving majors outside the humanities a chance to broaden and combine their studies through the program.

**Requirements**

- Students must have above average performance in humanities courses.
- The proposed project should show coherence, focus, and seriousness of purpose.
- Each project must be sponsored by two faculty members, one of whom will be the primary advisor. One advisor may be external to the university.
- Students must complete the research thesis and participate in the honors seminar for two years, the second of which must be the student’s senior year.

**Application process**

Applications are accepted in the spring of the applicant’s sophomore year. Second-semester freshmen who plan to study abroad in their junior year or who already possess the necessary qualifications are also encouraged to apply.

Applications may be submitted by email or in hardcopy to Prof. Yi-Ping Ong. All applications must include:

- A completed application form (http://compthoughtlit.jhu.edu/wp-content/uploads/sites/87/2017/11/ApplicationHonorsProgram2012.doc), including the name of at least one faculty advisor
- Brief statement of purpose outlining the proposed thesis topic, with initial bibliography
- Unofficial transcript of undergraduate course work

**Required Course Work**

**Sophomore year (optional)**

Sophomores who plan to study abroad in their junior year and those who are ready to begin their honors research should consider participating in the honors seminar during their sophomore year.

**Junior year**

1. Two courses chosen from relevant offerings in the Department of Comparative Thought and Literature curriculum.
2. A semester-long honors seminar for all students in the program, in which the general progress of the students’ writing and research will be discussed, and senior students will present work-in-progress reports.
3. Optional independent study course on thesis project with one or both advisers.
faculty member outside of the department should meet regularly with the Department of Comparative Thought and Literature's director of graduate studies.

**Third-Year Review**

During their third year of residence, after completing all outstanding seminar papers, students will have their work reviewed by a faculty committee. The committee will comprise three faculty members from the department and the faculty members from the other departments with whom the student plans to conduct field exams. The review allows the faculty to assess the student's progress, clarify his or her status in regards to remaining course work, and define future fields. Prior to the meeting, the student should circulate materials that he or she judges to be work that will best serve the purpose of the review.

**Field Examinations**

In their third and fourth years, students are expected to complete three field exams. The exams may serve to help students refine their dissertation topics, or they may be a means of extending and deepening students' knowledge of an area in which they propose to teach and conduct research.

The examinations may take a variety of forms, and the form should be discussed at the student's third-year review. Examples include:

- Work further on a project begun in a seminar and produce a longer paper that would become part of a dissertation
- Read into and across a particular field, writing a series of short papers on the reading or sitting for a written or oral examination on the material studied
- Design and teach an undergraduate course in an area of interest
- Complete the requirements for an MA degree in another department, as a way of strengthening claim to teach in that field

**Undergraduate Teaching**

Graduate students have many opportunities to develop their skills and confidence as a teacher. Beginning in the second year, students often serve as teaching assistants for courses taught by the department's faculty or, if appropriate, for courses in other departments. In the past, PhD students have taught courses in French and German language programs, English composition and literature, history, philosophy, and political science. More experienced students are encouraged to teach courses of their own invention as a way of completing a field exam, in competition for one of the Dean's Teaching Fellowships, or to add to the department's array of offerings.

**Dissertation Review**

A second formal review of a student's work will take place after the completion of field exams, either in the student's fourth year or in the fall semester of the fifth year. This review will connect the student with the faculty member with whom he or she will write a dissertation.

The review will take place when the student has composed a substantial piece of work associated with the dissertation, e.g., the draft of a chapter. This work will be circulated before the review, along with a prospectus of 10-40 pages, to the faculty members the student wishes to have as dissertation advisers. (If all of these advisers are from outside the Department of Comparative Thought and Literature, one of the department's faculty members, selected by the student, will also sit in on the review.)

This discussion is not intended to replace the graduate board oral, which will take place after the dissertation has been completed. However, it will mark the transition from work on the field exams to the preparation and writing of a dissertation.

**Departmental Presentations**

In their fifth year or beginning of their sixth year, students will give a talk on material from their dissertation to the students and faculty of the department and invited guests. This presentation gives students experience formally presenting their work. It also allows for a wider range of response to that work than a dissertation committee can provide and allows all students in the department to become better acquainted with each other's projects.

To apply, please submit the following to http://grad.jhu.edu/apply/apply-now/:

- Official Application
- Statement of purpose
- Three letters of recommendation
- Transcripts
- Sample of work
- Supplementary Application Form (Language Form)
- GRE scores and subject (optional)
- TOEFL/IELTS scores (if applicable)

**Financial Aid**

Tuition grants, stipends, and teaching fellowships are available to doctoral candidates.

**Faculty**

**Acting Chair**

Leonardo Lisi

**Associate Professor**

Leonardo Lisi

Director of Undergraduate Studies European literature of the long nineteenth century; European modernism; Kierkegaard and German idealism; tragedy and the tragic; philosophical aesthetics and literary forms

**Professor**

Paola Marrati

Director of Graduate Studies Modern and contemporary French Philosophy, American Pragmatism and Skepticism, Phenomenology, Philosophy and Cinema, Feminist and Queer Theory; (secondary appointment: Department of Philosophy)

**Assistant Professors**

Anne Eakin Moss

Russian literature and cinema; women's studies, literary theory and film theory

Yi-Ping Ong

19th- and 20th-century literature and philosophy, the novel, modernism, existentialism, ethics, and justice in contemporary Anglophone literature

For current course information and registration go to https://sis.jhu.edu/classes/
Courses

AS.300.113. Freshmen Seminar: Drama and Gender in Shakespeare's England. 3.0 Credits.
In this seminar we will read male and female authored plays and discuss how they reflect contemporary social expectations in Tudor and Stuart England. Authors include William Shakespeare; Mary Sidney, Countess of Pembroke; Christopher Marlowe; Elizabeth Cary; Ben Jonson; and Mary Sidney, Lady Wroth.
Instructor(s): E. Patton
Area: Humanities.

AS.300.115. Introduction to Romantic Poetry. 3.0 Credits.
This course offers an introduction to romantic poetry through a comparative approach to three of the movement's key authors: Friedrich Hölderlin, John Keats, and Giacomo Leopardi. We will work through their main writings in detail along with considerations of their cultural contexts and theoretical and critical approaches to romanticism more broadly.
Instructor(s): L. Lisi
Area: Humanities.

AS.300.133. Freshmen Seminar: Women of Epic Fame in Literature and Drama, 800 BCE-1650 CE. 3.0 Credits.
From Homer's Odyssey to Shakespeare's Antony and Cleopatra, powerful women who achieve their ends by working from within the system are often overlooked or not fully explored. Our readings and discussions will foreground these women of fiction, while we also consider the social conditions of their living contemporaries. Readings will include: Homer's Odyssey (Penelope); Virgil's Aeneid (Dido); Dante's Inferno (Beatrice); Milton's Paradise Lost (Eve), and several accounts of Cleopatra in plays by Shakespeare and his contemporary women writers. Cross listed with Theater Arts, Writing Seminars, and WGS.
Instructor(s): T. Tower
Area: Humanities
Writing Intensive.

AS.300.143. Introduction to Comparative Literature. 3.0 Credits.
This course offers an introduction to the history, theory, and praxis of comparative literature. We will read texts from some of the founding figures of the discipline and look at the most recent debates in the field, including translation studies, literary theory, and world literature, among others. Particular attention will be given to the methodologies and problems of studying literatures in different linguistic traditions and the relation between literature and other areas of thought and culture, such as philosophy, art history, and psychoanalysis. Case studies in comparative approaches to literature will provide concrete examples to our discussions.
Instructor(s): L. Lisi
Area: Humanities
Writing Intensive.

AS.300.202. Life and Form in Modern Thought. 3.0 Credits.
This course is a theoretical treatment of the question of form in fragmented bourgeois society since the late eighteenth century. Essential to modernity is a political and philosophical conflict between established forms and individual and collective lives. We will treat the concepts of form, freedom, and subjectivity in four spheres: aesthetics, morality, political economy, history. We will read texts by Kant, Hegel, Marx, Lukacs, Weber, and Adorno, literary works by Goethe, Rilke, Kafka, Stevens, and discuss paintings by Manet, Malevich, Guglielmo.
Instructor(s): O. Mehrgan
Area: Humanities.

AS.300.228. Brain and Society. 3.0 Credits.
On April 2, 2013, President Obama unveiled the Brain Activity Map Project, a 100 million dollar investment to map the single-celled neurons composing the human brain. Scientific in its aim, the project is culturally significant as well. Popular websites lumosity.com and neuronetlearning.com offer brain-exercises to boost intelligence, while the emergent academic fields neurophilosophy, neuroethics, and neurohistory borrow from the brain sciences. The interaction between the brain and society, however, is by no means new. In this course, we will investigate the origins of brain maps and trace their reception in nineteenth-century European and American literature, philosophy, and politics. Topics include phrenology; the nervous system; psychopathology, and brain localization, and these fields' resonance in German Idealism, Victorian literature, French anthropology, and American fiction. The course is reading intensive.
Instructor(s): L. McGrath
Area: Humanities, Social and Behavioral Sciences.

AS.300.231. Introduction to Comparative Literature. 3.0 Credits.
This course offers an introduction to the history, theory, and praxis of comparative literature. We will read texts from some of the founding figures of the discipline and look at the most recent debates in the field, including translation studies, literary theory, and world literature, among others. Particular attention will be given to the methodologies and problems of studying literatures in different linguistic traditions and the relation between literature and other areas of thought and culture, such as philosophy, art history, and psychoanalysis. Case studies in comparative approaches to literature will provide concrete examples to our discussions.
Instructor(s): L. Lisi
Area: Humanities
Writing Intensive.

AS.300.232. Existentialism. 3.0 Credits.
What is existence and why do we care about it? What happens when we think about the nothing? What is the philosophical significance of issues such as commitment, marriage, death, and suicide, or of feelings such as anxiety, boredom, and nausea? We will consider these themes and read a selection of texts dealing with them by some of the most famous thinkers associated with the existentialist tradition, including Pascal, Kierkegaard, Nietzsche, Heidegger, Sartre, and Camus.
Instructor(s): O. Mehrgan
Area: Humanities.

AS.300.239. Philosophy and the Emotions. 2.0 Credits.
We will read some of the most important texts in the history of the philosophy of the emotions, including works by Plato, Descartes, Spinoza, Schopenhauer, Heidegger, and Freud. We will discuss themes such as love, shame, apathy, anxiety, the mind-body problem, the notion of spirit, the notion of mood, and the overall problem of the distinction between emotion and reason.
Instructor(s): A. Rot
Area: Humanities.
AS.300.241. The Literature of the Everyday. 3.0 Credits.
The ordinary, the common, the everyday: why does literary realism consider the experiences of the average individual to be worthy of serious contemplation? In this course, we will read closely a set of novels by Flaubert, Mann, Dickens, Zola, Tolstoy, and Woolf from the period between 1850 and 1950 in which the development of realism reaches its climax. These novels explore the nature of work, family, the body, consciousness, and the changing relation between individual and tradition in modernity. We will situate these novels in their social, historical, and literary contexts, and establish a set of terms for the formal study of the novel as a genre (plot, character, setting, narrative, etc.). (Students of all levels who are interested in literature are encouraged to take this course.)
Instructor(s): Y. Ong
Area: Humanities.

AS.300.283. Nineteenth-Century Science Fiction: Ecology, Utopia, and Catastrophe. 3.0 Credits.
This course will introduce students to some of the key texts of science fiction as the genre emerged during the nineteenth century. We will consider the intellectual contexts for the form's development in Britain, France, and the United States, as well as its emerging narrative conventions. In particular, we will consider how early sci-fi writers used non-realistic modes to dramatize problems and discoveries were at once real and yet hard to fathom within the parameters of everyday cognition: deep geological time, alternative social arrangements, post-human landscapes. Texts may include H.G. Wells’ The Time Machine, Charlotte Perkins Gilman’s Herland, Samuel Butler’s Erewhon, Edward Bulwer Lytton’s The Coming Race, William Morris’ News from Nowhere, and Jules Verne's 20,000 Leagues Under the Sea.
Instructor(s): S. Lecourt
Area: Humanities
Writing Intensive.

AS.300.290. Freshman Seminar: Shakespeare and his “Goddess”: real and imaginary lovers in the poetry and drama of early modern Europe. 3.0 Credits.
Shakespeare’s description of his lover’s eyes as ‘nothing like the sun’ is both an homage and a sendup of a 300-year-old poetic convention reaching back to the days of Petrarch and the early humanist poets. Incorporating music and drama, we will examine that sonnet tradition from the perspective of Shakespeare and his contemporaries, tracing both the historical roots of the Shakespearian sonnet form its influence on the music of the present day, and finishing the semester with Shakespeare’s The Taming of the Shrew, a play that further illustrates and problematizes Shakespeare’s ‘goddess’ reference. Readings will include poetic dialogues between male and female poets, such as those by the early Italian Petrarchans Vittoria Colonna, Michelangelo, Veronica Gambara, and Gaspara Stampa; their French counterparts, Maurice Scève, Louis Labé, Joachim du Bellay and Pernette du Guillet; and later reflections on the sonnet by Shakespeare and his English contemporaries: Sir Philip Sidney, Sidney’s niece, Mary Herbert, Lady Wroth; John Donne; Robert Southwell; and Katherine Phillips. All continental works will be read in translation.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

AS.300.291. Freshman Seminar: Home and Exile. 3.0 Credits.
This interdisciplinary seminar examines the concept of home and the condition of exile in 20th century Russian and Soviet culture from a variety of theoretical and methodological perspectives. Students will be introduced to classics of Soviet dissident, exilic, and official literature (Akhmatova, Brodsky, Nabokov, Bulgakov, Zamyatin), Soviet films (including Tarkovsky’s Solaris), as well as key theoretical texts about what it means to be “at home.” Open to freshmen and sophomores with approval of professor.
Instructor(s): A. Eakin Moss
Area: Humanities
Writing Intensive.

AS.300.303. Multum in Parvo: Forms of Short Fiction. 3.0 Credits.
The theory and practice of reading brief narratives, from the parable to the post-modern short story. We will be attending to the rhetorical and ethical issues that are raised within the compass of such fictions, with consideration of some specific forms that have shaped the development of recent literary tales: the case history, portraits of the artist, fictions of detection, and certain enduring philosophic myths. Time permitting, we’ll also examine how a few of our narratives have been translated into another medium such as film.
Instructor(s): R. Macksey
Area: Humanities
Writing Intensive.

AS.300.305. Islamic Philosophy. 3.0 Credits.
This course is an introduction to key concepts and seminal texts of Islamic Philosophy in the classical period, running from the 7th to the 13th century. Although instrumental to the transmission of Greek philosophy and to the rise of modern philosophy in the western world, Islamic philosophy is not merely a conduit of transmission. Philosophers on Islamic lands, offered original philosophical solution to both old problems, and new problems that arose with monotheism. We will begin our examination of the specificity of Islamic Philosophy by situating it in its historical and political context. We will have to tackle fundamental questions: How did philosophers who wrote in Arabic translate and transmit Greek philosophical texts? What does it mean to do philosophy within an Islamic context? Is it not an oxymoron to talk about philosophy within a religious context? The course is divided into three sections that treat of three general fields: politics, metaphysics and psychology and discusses the major Philosophers of the classical period, with particular attention paid to the work of Alfarabi, Avicenna and Averroes.
Instructor(s): L. Ferhat
Area: Humanities
Writing Intensive.

AS.300.307. Dostoevsky and Critical Theory. 3.0 Credits.
The tormented, obsessive and sadistic characters of Dostoevsky’s novels posed a challenge to positivism and reason too scandalous and compelling to be ignored. The novels inspired some of the most brilliant and influential thinkers of the nineteenth and twentieth centuries in the fields of religion, philosophy, psychology and literary theory. We will read three of Dostoevsky’s philosophically challenging novels alongside works by these critics and philosophers. While exploring their ideas about faith and unbelief, madness and reason, violence and torture, society and history, we will also inquire into the relationships among literature, philosophy and biography and examine the processes of influence and adaptation.
Instructor(s): A. Eakin Moss
Area: Humanities.
AS.300.310. Introduction to Psychoanalysis. 3.0 Credits.
One of the most controversial intellectual endeavors of the 20th century, psychoanalysis is a theory about human nature, motivation, behavior, development and experience, as well as a clinical method of treatment for psychological disorders. We will read texts by Freud, Jung, Ferenczi, Rank, Horney, Klein, Anna Freud, Lacan, and others.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.316. Philosophy and Revolution: Four Case Studies. 3.0 Credits.
This course offers a historical and systematic inquiry into the modern idea, most clearly expressed by the young Karl Marx, that revolution should be the realization of philosophy. We will take up four revolutionary moments or four crucial years in four places and study them together with their philosophical influences and/or consequences: the French Revolution of 1789/1792 with Hegel, the Russian/October Revolution of 1917 with Lenin and Georg Lukács, the Iranian Revolution of 1979 with Michel Foucault, the Egyptian Revolution of 2011 with Alain Badiou. Some of the concept with which we will be engaging include freedom, alienation, historical necessity, reification, political spirituality, infinity.
Instructor(s): O. Mehrgan
Area: Humanities
Writing Intensive.

AS.300.317. The Russian Novel. 3.0 Credits.
Russian authors began writing novels in the shadow of counterparts in Western Europe, and thus had the chance to experiment with the form and scope of genres and themes they found in European literature: Alexander Pushkin's novel in verse Eugene Onegin pays homage to Byron's Don Juan and satirizes Richardson's Pamela; Mikhail Lermontov's nested stories A Hero of Our Time owes a debt to Romantic and gothic fiction, and Nikolai Gogol's Dead Souls brings Dante's Inferno to the Russian provinces. From these literary forefathers emerged the likes of Feodor Dostoevsky and Leo Tolstoy, who made a lasting impact on world literature with their psychological and philosophical novels. This course examines the Russian novel in its historical and cultural context alongside contributions of Russian literary criticism in defining novel form and genre.
Area: Humanities
Writing Intensive.

AS.300.324. Cinema of the 1930s: Communist and Capitalist Fantasies. 3.0 Credits.
Comedy and musical comedy film flourished in the USA during the Great Depression as well as in the USSR during the Stalinist Great Terror. This course will compare films of the era in a variety of genres (musical, epic, Western, drama), examining the intersections between politics and aesthetics as well as the lasting implications of the films themselves in light of theoretical works on film as a medium, ethics and gender.
Instructor(s): A. Eakin Moss
Area: Humanities.

AS.300.325. American Madness – History of the Treatment of the Mentally Ill. 3.0 Credits.
As mental illnesses became a social issue during the 18th century, community institutions were created in order to handle the needs of individuals with such illnesses collectively. This course will investigate the history of these institutions in the USA from the seemingly quiet, secluded, and peaceful private asylums in country settings, at the beginning of the 19th century, through the notorious crowded public, so-called “psychopathic hospitals” in mid-20th century, to the crisis-services, short-term acute psychiatric units, and out-patient services that followed the “death of the asylum” at the end of the 20th century. The history of the institutional care of the mentally ill in America is also the story of American psychiatry changing attitudes towards these individuals. Reading will include selections from 200 years of writings of asylum superintendents, psychiatrists, patients, and historians of psychiatry such as Foucault, Goffman, Grob, Scull, Lunbeck, Micale, and Mora.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.327. Introduction to Comparative American Cultures: Obama and Philosophy. 3.0 Credits.
This course will investigate the philosophical as well as theological, juridical and political, and rhetorical and literary backgrounds that have informed and shaped Barack Obama's writings, speeches, and policy strategies leading up to and during his presidency. While paying minute attention to a few selected controversial debates in domestic and international governance and relations, and while discussing the question of Obama's legacy in and after the upcoming elections, our primary focus will be on understanding the curious blend of Christian realism, influenced by the theologian Reinhold Niebuhr, the tradition of American civic republicanism and pragmatism, and Obama's specific brand of post-Civil Rights, if not necessarily post-racial, politics. All these tenets coalesce in a vision and politics that may well be described as one of "deep" pragmatism. Attention will be paid to Obama's early appeal to "simple ideas" and "small miracles," each of them yielding the Biblical and sobered injunction of a "hope against hope." But extensive consideration of his thought and impact in the assessment of biographers and intellectual historians, legal scholars and political theorists, cultural critics and pundits will add to our attempt to understand and take stock of the Obama phenomenon as well.
Instructor(s): H. de Vries
Area: Humanities.

AS.300.333. Melancholy in Science, Literature, and Film. 3.0 Credits.
This course explores the manifold nature of melancholy from an interdisciplinary perspective that combines sciences, history of medicine, and the arts. Defined by Greek medicine as the excess of black bile, melancholy, in its long history, has been seen as disease of the soul, state of intellectual grace, or psychological condition. The course will examine chronologically the development and variety of the meanings of melancholy between medical texts, visual representations, poetry, psychoanalytic theory, and films. The works analyzed will include, among others, those by Galen, Robert Burton, Albrecht Dürer, Shakespeare, Cervantes, Baudelaire, Freud, Lars von Trier.
Instructor(s): E. Fabietti
Area: Humanities.
AS.300.335. Victorian Literature as World Literature. 3.0 Credits.
What does it mean to read literature in a global context? How are literary texts that we think of as products of distinct national cultures plugged into larger global systems – even if they seem unaware of it? In this course we'll consider these questions through sustained readings of major Victorian literary texts such as Bram Stoker's Dracula (1897) and Charles Dickens's Great Expectations (1861). We will retrace how these books exercised cultural influence beyond the borders of Great Britain; how networks of trade, tourism, and imperial power brought authors from different cultures into contact with one another; and how Victorian texts have become a part of our culture in unexpected ways. Other primary texts may include Arthur Conan Doyle's The Sign of Four (1890), the poetry of Romesh Chunder Dutt, and first-hand accounts of Oscar Wilde's 1882 American lecture tour; critical readings will cover postcolonial theory, media theory, and histories of colonialism and urbanization.
Instructor(s): Y. Ong
Area: Humanities
Writing Intensive.

AS.300.338. Comic Evolution: Stages in Development of Comedy. 3.0 Credits.
An eclectic tour of comic forms and theories from classical antiquity to contemporary practice. Although the textual focus will be on stage comedy, we'll also consider the comic in other forms and media—film (Keaton), comic strip (Herriman), and contemporary satire. Some of the familiar questions on the agenda: topical vs. 'perennial' material, the social functions of comedy, the 'shelf life' of humor, butts & scapegoats, symmetries & asymmetries between comedy and tragedy, verbal and non-verbal comic devices, the general rhetoric of comedy, and the possibility of a Grand Unified Theory. (Final paper.)
Instructor(s): R. Macksey
Area: Humanities
Writing Intensive.

AS.300.345. Madness Interpreted – A Case Study in Medical Humanities. 3.0 Credits.
Too often conventional medical education teaches the student to translate a rich and complex narrative of illness into a minimalistic account, stripped of its ambiguities. Case presentations, too, are highly formalized reports lacking the historical, cultural, and social context. Although medicine since antiquity relies on the interpretation of observations, "evidence-based medicine," when reductively used, tends to ignore the basic fact that we are "self-interpreting animals." Patients and doctors alike try to make sense of their experiences as they recount them and, hence, case narratives teach us not only about disease and medical practice but also what it means to be human. This course will concentrate on the “case” of what is arguably the most famous psychiatric patient in the world, Daniel Paul Schreber, the German fin-de-siècle Senatspräsident of the Saxon Supreme Court. Beginning with Freud, the first doctor who turned Schreber's rich psychotic delusional world, as expressed in his bizarre, at times comic and then again painful, Memoir, into a “case of paranoia,” we will follow the many interpretations that this narrative of illness with its unique cosmology, private theology, extraordinary creatures, transgressed sexuality, and cataclysmic vision of the universe, inspired in generations of psychoanalysts, historians, philosophers, theologians, literary critics, essayists, and scholars in political science as well as queer studies. Whether he was a paranoid schizophrenic, victim of traumatic abuse, a solipsistic philosopher, proto-fascist, or cultural hero, Schreber's memoir offers a paradigmatic case in the study of the field of medical humanities. Readings will include: Schreber, Freud, Benjamin, Canetti, Klein, Lacan, Deleuze and Guattari, de Certeau, Lingis, Lyotard, and Santner. Cross-listed with GRLL and History.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.346. Forms of Moral Community: The Contemporary World Novel. 3.0 Credits.
Literary and philosophical imaginations of moral community in the post-WWII period (1950-2001). Texts include: Coetzee, Disgrace; McEwan, Atonement; Achebe, Things Fall Apart; Ishiguro, An Artist of the Floating World; Roy, The God of Small Things; Lessing, The Grass is Singing; Mistry, A Fine Balance; Morrison, Beloved; and essays by Levi, Strawson, Adorno, Murdoch, Beauvoir and Barthes on the deep uncertainty over moral community after the crisis of World War II. Close attention to novelistic style and narrative will inform our study of the philosophical questions that animate these works. What does it mean to acknowledge another person’s humanity? Who are the members of a moral community? Why do we hold one another responsible for our actions? How do fundamental moral emotions such as contempt, humiliation, compassion, gratitude, forgiveness, and regret reveal the limits of a moral community? Cross listed with English.
Instructor(s): Y. Ong
Area: Humanities.

AS.300.351. The Phenomenon of Boredom from an Interdisciplinary Perspective. 3.0 Credits.
We will examine the history, philosophy, sociology, and psychology of boredom and consider the characteristics, concerns, and methods of the different fields and disciplinary frameworks in which this phenomenon has been studied.
Instructor(s): A. Rot
Area: Humanities
Writing Intensive.
AS.300.357. Forms of Modern Fiction. 3.0 Credits.
A comparative tour of modern narrative forms from 3 continents. The emphasis is on the development of shorter fictional models, though some of the founders and innovators are better known for their novels. The emphasis will be on the emergence new structural, rhetorical, and thematic concerns, including adaptation to other media. There will be an optional hour for queries and discussion TBA.
Instructor(s): R. Ong
Area: Humanities
Writing Intensive.

AS.300.363. Reading Judith Shakespeare: poetry and drama by women writers in Elizabethan England (ca 1558-1650). 3.0 Credits.
Virginia Woolf's account of the thwarted career of Shakespeare's hypothetical sister, Judith (in A Room of One’s Own) frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, Mary Wroth, and others. Students will create fictional biographies of “Judith Shakespeare” and her literary accomplishments. Cross listed with English, Theater Arts, Writing Seminars, and WGS.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

AS.300.365. Desire in the Fin de siècle. 3.0 Credits.
This course examines the obsession with desire at the turn of the 20th century in literature, drama, philosophy and social thought and its implications for notions of self and community in modernity. We will read comparatively across European, Russian and American cultures, including Stoker’s Dracula, Hamsun’s Hunger, plays by Chekhov, Strindberg, Ibsen, Wilde, and stories by Tolstoy, Gorky, Chopin and Larsen.
Instructor(s): A. Eakin Moss
Area: Humanities
Writing Intensive.

AS.300.369. The Bible and Philosophy (Introduction to Intellectual History). 3.0 Credits.
This course will examine several attempts by ancient, modern, and contemporary thinkers to come to terms with the Biblical concept of creation and providence, revelation and prophecy, law and election, apocalypse and eschatology, with a special emphasis on the first articulation of the idea of Christian universalism, faith and justification, time and eternity, sacrifice and the body. Readings will include the entire corpus of St. Paul’s authentic letters, the major Scriptural passages on which he writes, but also selections from Philo of Alexandria, St. Augustine, Spinoza, Nietzsche, Karl Barth, Jakob Taubes, Alain Badiou, Giorgio Agamben, and others.
Instructor(s): H. de Vries
Area: Humanities.

AS.300.371. The Modernist Novel: James, Woolf, and Joyce. 3.0 Credits.
The purpose of this course is to survey works by three of the greatest, most relentless innovators of the twentieth century – Henry James, Virginia Woolf, and James Joyce – who explored and exploded narrative techniques for depicting what Woolf called the “luminous halo” of life. Selected works include: “The Beast in the Jungle,” The Portrait of a Lady, Jacob’s Room, Mrs. Dalloway, To the Lighthouse, A Portrait of the Artist as a Young Man, and Ulysses.
Instructor(s): Y. Ong
Area: Humanities.

AS.300.383. History of Madness from the Bible to DSM-V. 3.0 Credits.
Madmen, lunatics or the insane, have seen an extraordinary variety of responses and attitudes across the centuries. Whether seen as a “true” phenomenon or as socially constructed “madness” was defined and treated, examined and controlled, diagnosed and “cured” according to the spirit of the time. This course will follow the varied social imageries of “madness” throughout Western history, from the Bible to the contemporary and controversial Diagnostic Statistical Manual (DSM) in its most recent 5th edition. Alongside primary texts by Hippocrates, Avicenna, Pinel, and Freud and secondary texts by Michel Foucault, Ian Hacking, Edward Shorter, and Elaine Showalter, among others, we will acquaint ourselves with first-person accounts of “madness” and its different forms of treatment, ranging from lunatic asylum, through electric-shock treatments and lobotomies to psychoanalysis. The course will explore the interaction between the historical and social, scientific and political as well as economical factors that have shaped the views of “madness” and its treatment.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.389. Freud's Cases - Source of Psychoanalytic Knowledge. 3.0 Credits.
Even though major scientific discoveries have been made from the intensive study of singular cases, modern science is mostly quantitative in its approach. In this course we will follow psychoanalysis' use of clinical practice as the primary context for the generation of knowledge. We will use two notions from the philosophy of science: “exemplars” (Kuhn) and “personal knowledge” (Polanyi), as we read Freud's cases in which he combines theoretical consideration and detailed investment in the singularity of the person. In his accounts of the “hysteria” of Dora, the “phobia” of Little Hans, the “obsession” of the Rat Man, the “infantile neurosis” of the Wolf Man and Schreber’s “paranoia,” Freud not only generated theoretical and technical knowledge but also constituted the “single case study” genre of investigation, as the primary source of psychoanalytic knowledge. Readings will include: Freud, Foucault, Polanyi, Kuhn, Hacking, and Forrester. Cross-listed with Film and Media Studies
Instructor(s): O. Ophir
Area: Humanities.

AS.300.417. Women in Psychoanalysis - The Second Generation of Psychoanalytic Knowledge. 3.0 Credits.
With its forced dissemination after the Anschluss of Austria with Germany in 1938, psychoanalysis shifted its center of gravity not only from Vienna to London, creating “a new kind of diaspora,” but also from a patriarchal and phallocentric focus towards a mother-child centered theory and practice. After Freud's death, psychoanalysis, notably in Britain, was led by two women psychoanalysts, Melanie Klein and Anna Freud, each with a very different view on the nature of childhood, sexuality and aggression, intellectual development, the development of responsibility, motherhood, pathology, and the life of the mind as such. This course will introduce the important intellectual psychoanalytic concepts and theories, which were developed not only through the clinical work of these two exceptional women with children, but also through what came to be known in the history of psychoanalysis as “The Controversial Discussions” : a set of intense debates between two thought collectives organized around these female pioneers. Readings will include: Sigmund Freud, Klein, Anna Freud, Winnicott, Heimann, Jones, and Isaccs. Cross-listed with History, Psychology, WGS.
Instructor(s): O. Ophir
Area: Humanities.
AS.300.419. 1966 before and after: French theory. 3.0 Credits.
The "Languages of Criticism" conference held at Hopkins marked a watershed moment in the history of literary studies and redefined, for many scholars and intellectuals, the nature of humanistic inquiries. This course involves the close study of key texts that, from the postwar years into 1970s (from Bachelard, Poulet, and Starobinski to Lacan, Barthes, and Derrida), are landmarks in this changing critical and philosophical landscape. Knowledge of French is desirable but not required.
Instructor(s): E. Ender
Area: Humanities.

AS.300.420. The Violence from Within and the Migration of Knowledge - The Marginalization of Melanie Klein in American Psychoanalysis. 3.0 Credits.
Freud's idea of an inborn death instinct and its link to war and violence was greatly developed by the Austrian-born British psychoanalyst Melanie Klein. Yet these ideas were largely rejected by mainstream American psychoanalysis as they were judged to be "un-American." In this seminar, we will read primary psychoanalytic texts on violence, aggression, sadism and war by Sigmund Freud, Melanie Klein, Wilfred Bion, among others and will follow their reception, reshaping and reconstruction among American analysts such as Otto Kernberg, Heinz Kohut, Roy Schafer, and others. Secondary resources will include historical studies on the migration of psychoanalysis by George Makari, Nathan Hale, and Edith Kurzweil among others. Co-listed with 300.610
Instructor(s): O. Ophir
Area: Humanities.

AS.300.427. Reading Freud. 3.0 Credits.
Sigmund Freud was one of the most influential thinkers of the 20th century. Psychoanalysis, which was his theory of mind, a research method, and a therapeutic technique, offered concepts that pervade Western culture and the humanities. In this seminar which is designed for students from all fields of knowledge, we will closely and chronologically read Freud's major works, follow his developing theories, and become familiar with psychoanalytic concepts such as the unconscious, the uncanny, instincts and aggression, which illuminated mysteries in other fields, from literature to anthropology, from political science to religious studies, and from philosophy to the arts.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.431. Russian Literary Modernisms. 3.0 Credits.
Play with form and genre, self-reflexivity, fragmentation, linguistic creativity, and destabilizing humor all characterize classic works in Russian literature written before and after what would in literary historical terms be considered the Modernist period. This seminar will test a number of recent formal and philosophical definitions of Modernism against a wide range of Russian literary classics that can be seen to fall loosely into the genre including works by Gogol, Tolstoy, Chekhov, Bely, Olesha, Shklovsky, Bulgakov, and Tertz. We will also look at Russian literary critical texts that define and constitute Modernism in the Russian context. Texts in translation. Co-listed with AS.300.641
Instructor(s): A. Eakin Moss
Area: Humanities
Writing Intensive.

AS.300.433. Cavell: Skepticism and the Ordinary. 3.0 Credits.
This seminar studies the main works and concepts of Stanley Cavell, one of the most original and influential philosophers of the 20th century. It will address in particular his analyses of skepticism, the ordinary, and moral perfectionism as they are expressed in philosophy, but also in literature and films.
Instructor(s): P. Marrati
Area: Humanities.

AS.300.435. Emmanuel Levinas: Essential Works, Guiding Concepts, Lasting Influence. 3.0 Credits.
This seminar will address the major writings and guiding concepts of Emmanuel Levinas and investigate his increasing critical role as a touchstone and dividing line in the formation of twentieth century and contemporary schools of thought (phenomenology, pragmatism, post-analytic philosophy, literary, feminist, and political theory, anthropology). Additional readings will include Stanley Cavell, Jacques Derrida, Vasily Grossman, Jean-François Lyotard, and Hilary Putnam.
Instructor(s): H. de Vries
Area: Humanities.

AS.300.599. Independent Study. 3.0 Credits.
Instructor(s): L. Lisi; R. Macksey.

AS.300.610. The Violence from Within and the Migration of Knowledge - The Marginalization of Melanie Klein in American Psychoanalysis.
Freud's idea of an inborn death instinct and its link to war and violence was greatly developed by the Austrian-born British psychoanalyst Melanie Klein. Yet these ideas were largely rejected by mainstream American psychoanalysis as they were judged to be "un-American." In this seminar, we will read primary psychoanalytic texts on violence, aggression, sadism and war by Sigmund Freud, Melanie Klein, Wilfred Bion, among others and will follow their reception, reshaping and reconstruction among American analysts such as Otto Kernberg, Heinz Kohut, Roy Schafer, and others. Secondary resources will include historical studies on the migration of psychoanalysis by George Makari, Nathan Hale, and Edith Kurzweil among others. Co-listed with 300.610
Instructor(s): O. Ophir
Area: Humanities.

AS.300.617. Philosophy and Literature in Either/Or.
Celebrated and reviled alike, Kierkegaard's 1843 Either/Or has been viewed as both the culmination of the Enlightenment project and the birth of existentialism, a playful work of romantic literature and a piece of late-Hegelian philosophy, a vindication of the secular everyday and the articulation of a modern faith in a transcendent God. In this course we read the work closely and in its entirety and pay particular attention to the relation between its philosophical arguments and literary forms of presentation.
Instructor(s): L. Lisi.

AS.300.625. Russian Literary and Critical Theory.
Close reading of major authors from the Russian literary theoretical and critical tradition including Bakhtin, Eikhenbaum, Jakobson, Lotman, Shklovsky and Tynianov. Student will present primary sources or case studies from their own fields and research.
Instructor(s): A. Eakin Moss.
AS.300.626. Philosophy of/and the Novel.
The novel is unique among literary genres in its capacity to represent the inner life of characters portrayed in the third person. Neither poetry nor drama is equipped to convey the innermost thoughts of characters who do not speak for themselves but are instead narrated. This course will examine the implications of “third-person subjectivity” for the novel’s claim to construct (or reconstruct) a world governed by ethical norms that are all but impossible to fulfill. In fact, the very impetus for the novel is the unresolvable tension between the ideals that a work posits and the choices its characters face in a world defined by compromise and limitation. What criteria for judgment does the novel provide? How does it establish a world it simultaneously critiques as devoid of meaning save the meaning posited by the subject? We will also investigate the use of novels and novelistic form in philosophy. Is it possible for novels to be treated not only as vehicles, but also as equivalents to philosophical views? How do novelistic forms provide new ways of thinking or philosophizing? Readings to include works by Lukács, Bakhtin, Hamburger, Sartr, Beauvoir, Ricœur, Murdoch, Nussbaum, Diamond and novels by Coetzee and Flaubert.
Instructor(s): R. Tobias; Y. Ong.

Instructor(s): A. Eakin Moss
Area: Humanities.

This seminar examines what in Bergson’s philosophy remains, or becomes, challenging for contemporary debates. Particular emphasis is given to his concepts of life and time, but also to his philosophical anthropology and his reflections on the ambiguous interplay between war, technology, and religion.
Instructor(s): P. Marrati.

AS.300.631. Russian Literary Modernisms.
Play with form and genre, self-reflexivity, fragmentation, linguistic creativity, and destabilizing humor all characterize classic works in Russian literature written before and after what would in literary historical terms be considered the Modernist period. This seminar will test a number of recent formal and philosophical definitions of Modernism against a wide range of Russian literary classics that can be seen to fall loosely into the genre including works by Gogol, Tolstoy, Chekhov, Bely, Olesha, Shklovsky, Bulgakov, and Tertz. We will also look at Russian literary critical texts that define and constitute Modernism in the Russian context. Texts in translation. Co-listed with AS.300.431
Instructor(s): A. Eakin Moss
Area: Humanities.

Readings in Balzac, Stendhal, Hugo, Musset and Nerval, plus viewings of Géricault, Delacroix, Daumier. Theories of Romanticism, from Baudelaire to present will be examined and commented as well. Course taught in French. Recommended Course Background: AS.212.333 and 212.334
Instructor(s): J. Neefs; M. Fried
Area: Humanities
Writing Intensive.

AS.300.649. The Fate of Nothing from Goethe to Heidegger.
Nothing and negativity play a central role in the literature and philosophy of the long nineteenth-century. In this course, we look closely at a number of approaches to these problematic concepts in Goethe, Hölderlin, Hegel, Schopenhauer, Leopardi, Kierkegaard, Nietzsche and Heidegger.
Instructor(s): L. Lisi.

AS.300.651. What Remains of the Human?.
This seminar discusses modern and contemporary philosophical and anthropological conceptions of the human and its uncertain boundaries: between the cultural and natural, the human and the inhuman, the animal and the spiritual, the living and the dead and so forth. Particular attention will be devoted to the ethical and political implications any definition of the human inevitably invites.
Instructor(s): P. Marrati.

AS.300.653. Martin Heidegger, Being and Time: Integral Reading and Current Perspectives.
Starting with a detailed discussion of its Introduction and Division One, this jointly taught seminar will bring phenomenological, hermeneutic, and deconstructive as well as analytic, epistemological, and pragmatist methods and viewpoints to bear upon this modern classic.
Instructor(s): H. de Vries; M. Williams.

AS.300.657. Martin Heidegger, Being and Time: Integral Reading and Current Perspectives, II.
Starting with a brief overview and recapitulation of themes discussed in its Introduction and Division One, this jointly will focus on Division Two of Being and Time and bring phenomenological, hermeneutic, and deconstructive as well as analytic, epistemological, and pragmatist methods and viewpoints to bear upon this modern classic.
Instructor(s): H. de Vries; M. Williams.

AS.300.661. Marcel Proust, Literature and Art.
Proust’s great sequence of novels À la recherche du temps perdu is also a theory of the Novel and indeed of Art. A close reading of Du côté de chez Swann, À l’ombre des jeunes filles en fleurs, La Prisonnière and Le Temps retrouvé will put this to the test. Required editions: Proust’s Du côté de chez Swann, Gallimard, Folio, À l’ombre des jeunes filles en fleurs, Gallimard, Folio, La Prisonnière, Gallimard Folio, Le Temps retrouvé, Gallimard, Folio, Contre Sainte-Beuve, Gallimard, Folio. The seminar is open to advanced undergrads, with authorization of the instructor.
Undergraduate are Seniors permitted to take this course. Recommended course background: At least 2 212.3xx courses
Instructor(s): J. Neefs; M. Fried.

AS.300.680. Marcel Proust, Literature and Art.
Proust’s great sequence of novels À la recherche du temps perdu is also a theory of the Novel and indeed of Art. A close reading of Du côté de chez Swann, À l’ombre des jeunes filles en fleurs, La Prisonnière and Le Temps retrouvé will put this to the test. Required editions: Proust’s Du côté de chez Swann, Gallimard, Folio, À l’ombre des jeunes filles en fleurs, Gallimard, Folio, La Prisonnière, Gallimard Folio, Le Temps retrouvé, Gallimard, Folio, Contre Sainte-Beuve, Gallimard, Folio. The seminar is open to advanced undergrads, with authorization of the instructor.
Undergraduate are Seniors permitted to take this course. Recommended course background: At least 2 212.3xx courses
Instructor(s): J. Neefs; M. Fried.

Cross Listed Courses

History of Art
AS.010.400. Looking at Language: Vision and Textuality from Surrealism to the Present. 3.0 Credits.
Considers the emergence of the “written painting” and other uses of language in the visual arts. Among our case studies: Magritte, Twombly, Ruscha, Indiana, Holzer, Wool, Lig'on, Darboven.
Instructor(s): M. Warnock
Area: Humanities.
AS.010.654. **Topics in Postwar Abstraction.**

Emphasis on European and American case studies from Pollock to the present; figures may include: Newman, Still, Frankenthaler, Louis, Noland, Olitski, Stella, Ryman, Marden, Hantai, Bishop, Jorn, Uecker, and Klein.

Instructor(s): M. Fried; M. Warnock.

**Classics**

AS.040.148. **Ancient Israel and ancient Greece in opera and on film. 3.0 Credits.**

Some of the most breathtaking (early and later) operas and films have been in intense dialogue with ancient societies, narratives, and cultural concepts. Contemporary hit movies center on diverse aspects of ancient narratives: the beginning of the world, violent wars, politics, erotic themes, and intricate existential questions. The course will introduce students to a comparative examination of the variety of approaches to ancient Israel and ancient Greece in the spectacular worlds of opera and cinema. The course will focus on major texts and archaeological material related to antiquity; works of world cinema will be analyzed.

Instructor(s): D. Yatromanolakis

**AS.040.693. The Pre-Socratics and Early Plato.**

This seminar will focus on the earliest phases of European philosophy. Topics that will be examined include: scholarly approaches to the fragments of major thinkers such as Herakleitos and Empedokles; the concept of "fragment;" the transition from the pre-Socratics to early Plato; the later reception of Herakleitos and Pythagoras in European thought.

Instructor(s): D. Yatromanolakis

**German Romance Languages Literatures**

AS.211.472. **Barbers and countesses: conflict and change in the Figaro trilogy from the age of Mozart to the 20th century. 3.0 Credits.**

2016 marks the bicentennial of Rossini’s irreverent masterwork The Barber of Seville, which premiered in Rome in February 1816. Thirty years earlier, in 1786, Mozart’s The Marriage of Figaro had opened in Vienna. The two operas, based on the first two plays of Beaumarchais’ controversial “Figaro trilogy”, stage conflicts of class and gender, challenging the assumptions of the aristocracy as well as the ludicrous pretentions of the raising bourgeoisie. The same themes inform the post-modern portrayal of the past in John Corigliano’s The Ghosts of Versailles (1991), which ideally completes the musical afterlife of the trilogy. By studying how the plays were adapted to the opera stage within their different cultural and historical contexts, the course will explore the representation of the ideological, social, and political turmoil that, eventually, culminated in the French Revolution. The course will also include field trips and screenings of movies such as Stanley Kubrick’s Barry Lyndon (1975) and Milos Forman’s Amadeus (1984). This course may be used to satisfy major requirements in both the French and Italian majors.

Instructor(s): E. Refini

Area: Humanities

Writing Intensive.

**Interdepartmental**

AS.360.134. **Great Books at Hopkins II: The Sciences. 3.0 Credits.**

Great Books at Hopkins II: The Sciences will combine readings from philosophy and literature with foundational texts from several scientific disciplines. Readings for this spring will explore links between traditional theories of economics and genetics in the context of literary developments, and will include: Xenophon’s Deconomicus, Mende’s "Experiments on Plant Hybridization," Marx’s Communist Manifesto, Darwin’s Voyage of the Beagle, Swift’s A Modest Proposal, Wharton’s House of Mirth, and Joyce’s Finnegans Wake.

Instructor(s): E. Patton; M. Roller

Area: Humanities

Writing Intensive.

**Art**

AS.371.304. **Photo Seminar: Wet Darkroom. 3.0 Credits.**

In this film based course, students develop a project of their choice over the semester working independently in the darkroom and meeting for weekly critiques and discussions. Using the zone system (a method of pre-visualization developed by Ansel Adams) students will experiment with different film, paper and developer combinations specific to their projects. Writing in the form of a journal as well as critical analysis of images are integral parts of the seminar experience.

Prerequisites: AS.371.146 or Permission Required

Instructor(s): Staff

Area: Humanities.

**Morton K. Blaustein Department of Earth and Planetary Sciences**

http://eps.jhu.edu/

The Department of Earth and Planetary Sciences offers programs of study and research in a wide range of disciplines including atmospheric science, ecology, environmental science and studies, geology, geochemistry, geophysics, oceanography, and planetary science. The undergraduate major in Earth and Planetary Sciences is flexible and allows the student, in consultation with a faculty adviser, to devise a program of study that is both rigorous and individualized. The graduate program develops skills in research through independent investigation under the general guidance of one or more members of the faculty, backed up by relevant course work. The department gives particular emphasis to the integration of experimental investigation, theoretical calculation, and quantitative field observations.

The Department also supports an interdisciplinary undergraduate program in Environmental Science and Studies (ENVS), which involves faculty from a range of departments across the university. The two ENVS majors and minor introduce students to Earth system science and the ways in which humans interact with and affect the Earth. ENVS is solution-focused and trains students to help solve the environmental and sustainability problems facing society today using the powerful tools of science and policy. Undergraduate degrees are typically specialized within traditional disciplines, but a primary goal of this program is to develop the ability of students to think outside of those boxes. Students learn theory, research, and practical applications of the natural and social sciences in their coursework, while also examining the relationship between humans and the environment through the lens of the humanities.

**Facilities**

The Department of Earth and Planetary Sciences is housed in Olin Hall, a modern building dedicated to the Earth sciences, nestled on a wooded
knoll on the western edge of campus. Its facilities include state-of-the-art instrumentation, a departmental library, and modern computer equipment. There are laboratories for crystallography, evolutionary biology/ecology, stable isotope geochemistry, materials science, and fluid and solid mechanics. Olin Hall also contains equipment for modern petrographic work (including a computer-controlled image analysis system), darkroom facilities, and a laboratory for sectioning rocks. There is also a substantial collection of rocks, minerals, and fossils. Facilities are available for a wide spectrum of fluid mechanical experiments, including thermal convection and solidification.

A JEOL 8600 electron microprobe in Olin Hall is available to all members of the department. Crystallographic facilities include a modern specimen preparation laboratory for transmission electron microscopy and single-crystal X-ray diffraction studies. The transmission electron microscopy laboratory houses state-of-the-art instruments capable of both high-resolution imaging at the atomic scale and microanalysis at the nanometer scale.

The department contains several computer laboratories containing clusters of workstations and personal computers, together with printers and scanners. These computers are used for numerical simulations, graphics applications, data manipulation, and word processing.

Field studies and excursions form an integral part of the program of instruction and research in geology and are closely integrated with the laboratory and course work. Situated at the fall line between the Coastal Plain and the Piedmont and only an hour's ride from the Blue Ridge and Appalachians, Baltimore is an excellent location for a department with a field-oriented program in geology. The department has a permanent field station for geological research, Camp Singewald, in the Bear Pond Mountains of Washington County, Maryland, and a vehicle for field use.

Supporting facilities on campus include the Milton S. Eisenhower Library, the Space Telescope Science Institute, and the Homewood High-Performance Computing Center. In addition, the JHU Applied Physics Laboratory, the facilities of the Smithsonian Institution and the Geophysical Laboratory and the Department of Terrestrial Magnetism of the Carnegie Institution of Washington are available by special arrangement for students qualified to use them. For students whose research requires substantial computation, special arrangements can be made to use the supercomputers at the NASA Goddard Space Flight Center and the National Center for Atmospheric Research.

Undergraduate Programs
The Department of Earth and Planetary Sciences offers the following majors and minors:

Earth and Planetary Sciences Major (p.)
Earth and Planetary Science Minor (p.)
Environmental Science Major (p.)
Environmental Studies Major (p.)
Environmental Studies Minor (p.)

The Earth and Planetary Sciences major focuses on the study of the physical, chemical, and biological processes that shape the Earth and other planets. It is designed primarily for science students who wish to have careers involving research and study of the Earth and planets, although it is also suitable for students planning careers in the health professions.

The interdisciplinary ENVS majors and minor introduce students to human-Earth interactions and processes, our complex relationship with the changing environment, and methods for solving environmental and sustainability problems. The Environmental Science major emphasizes the perspective of the natural sciences, while the Environmental Studies major emphasizes the social science perspective, but there is a set of common core courses shared by both these majors that create a strong interdisciplinary foundation. ENVS is designed to prepare students for a variety of potential career paths, including both graduate study and entry-level jobs in an environmentally related field.

In addition to major requirements, students are required to complete the university requirements for the bachelor’s degree. See Requirements for a Bachelor’s Degree (p. 7).

Earth and Planetary Sciences (EPS) Major (B.A.)
The Bachelor of Arts in Earth and Planetary Sciences is for undergraduates interested in the study of the physical, chemical, and biological processes that shape the Earth and the other planets, drawing on the disciplines of geology, geochemistry, geophysics, hydrology, ecology, geobiology, oceanography, and atmospheric science.

Students should design a specific plan of appropriate courses in consultation with their adviser and the EPS Director of Undergraduate Studies (DUS). Those who wish to be majors may proceed directly to the introductory courses at the 200-level, but depending on the student’s background, it may be appropriate initially to take a freshman seminar or 100-level course designed for the non-major. Our courses provide a broad educational base in the Earth, planetary, and environmental sciences and enable exploration of a set of electives at the 300- and 400-level, depending on the area of interest.

The department requires a total of 9 credits at the 100- or 200-level and 12 credits at the 300-level or above within the department, as well as science and math foundation courses from other departments. All courses must be taken for a letter grade, and students must earn a grade of C- or better to apply the course to the major.

EPS Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.270.224</td>
<td>Oceans &amp; Atmospheres</td>
<td>3</td>
</tr>
<tr>
<td>AS.270.220</td>
<td>The Dynamic Earth: An Introduction to Geology</td>
<td>3</td>
</tr>
<tr>
<td>AS.270.221</td>
<td>The Dynamic Earth Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

Other Science & Math Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.080.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>AS.110.106</td>
<td>Calculus I (Biology and Social Sciences)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.108</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>AS.110.107</td>
<td>Calculus II (For Biological and Social Science)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td></td>
</tr>
<tr>
<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
<td></td>
</tr>
<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.104</td>
<td>General Physics I for Biological Science Majors</td>
<td></td>
</tr>
<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td></td>
</tr>
</tbody>
</table>

EPS Elective Courses

One course at the 100-level or above (1-3 credits) | 3 |
Four courses at the 300-level or above (at least 3 credits each) 12

Total Credits 42

* Only one ENVS course numbered AS.271.xxx may apply towards the EPS major.

Courses recommended to enrich the educational background of the major:

EN.500.200 Computing for Engineers and Scientists 4
EN.553.291 Linear Algebra and Differential Equations 4
EN.570.108 Introduction Environmental Engineering 3
EN.570.239 Emerging Environmental Issues 3
EN.601.107 Introductory Programming in Java 3

Honors in EPS Major
To receive honors in Earth and Planetary Sciences, students must meet the following criteria:

• Take a challenging set of courses during the four years of study
• Earn a GPA in the major requirements of a 3.5 or higher.
• Complete a senior thesis (AS.270.495 Senior Thesis and AS.270.496 Senior Thesis) at a level judged to be sufficiently high by the faculty of the Department of Earth and Planetary Sciences.
• Present the results of the thesis orally in the Department of Earth and Planetary Sciences.

Sample Program of Study for the EPS Major

Freshman
Fall Credits Spring Credits
AS.110.108 Calculus I 4 AS.110.109 Calculus II (For Physical Sciences and Engineering) 4
AS.270.220 The Dynamic Earth: An Introduction to Geology 3 AS.270.224 Oceans and Atmospheres 3
AS.270.221 The Dynamic Earth Laboratory 2

9 7

Sophomore
Fall Credits Spring Credits
AS.171.101 General Physics:Physical Science Major I 4 AS.171.102 General Physics: Physical Science Major II 4
AS.030.101 Introductory Chemistry I 3 AS.270.3xx-2xx or higher 3

7 7

Junior
Fall Credits Spring Credits
AS.270.3xx-4xx 3 AS.270.3xx-4xx 3

3 3

Senior
Fall Credits Spring Credits
AS.270.3xx-4xx 3 AS.270.3xx-4xx 3

3 3

Total Credits: 42

Earth and Planetary Sciences Minor
The Earth and Planetary Sciences minor is for science undergraduates interested in learning about Earth and other planets through geology, geochemistry, geophysics, hydrology, ecology, geobiology, oceanography, and atmospheric science. Students take 12 credits of EPS courses, at least six of which are at the 300-level, and at least 16 credits of other natural sciences, quantitative studies, or engineering. No ENVS AS.271.xxx courses may count toward the minor. All courses must be taken for a letter grade, and students must earn a grade of C- or better to apply the course towards the minor.

AS.270.220 The Dynamic Earth: An Introduction to Geology or AS.270.224 Oceans and Atmospheres

Three credits of EPS courses at any level 3
Six credits of EPS courses at the 300-level or above 6
Sixteen credits of natural science, quantitative, or engineering courses not from the EPS Department, preferably biology, chemistry, physics, or mathematics.

Total Credits 28

Environmental Science Major (B.S.)
The Bachelor of Science in Environmental Science is an interdisciplinary major that introduces students to Earth system science and the ways in which humans interact with the environment. It equips students to use a variety of tools, such as policy, science, communication, and individual and societal behavior change, to solve environmental and sustainability problems but focuses on the perspectives and tools of the natural sciences. Environmental Science majors must complete a set of core courses common to both ENVS majors, including a senior capstone course and an applied experience involving either research or an internship, plus several additional natural science core courses and a suite of electives selected to form an adviser-approved focus area.

The ENVS senior capstone seminar involves the planning and execution of a tangible, group sustainability project on or off-campus. All ENVS majors must enroll in the capstone course in the fall semester of their senior year. The applied experience can be completed during any semester including summers and involves at least 80 hours of supervised, hands-on experience working with environmental or sustainability issues through a research project, internship, or study abroad program with a research or internship component. Synthesizing assignments reflecting on the experience are also required. The goal of the applied experience requirement is to ensure that students have practical experience in a research, workplace, or community setting that will help prepare them for the next step in their education and career.

Consult the ENVS advising guide on the program's website for additional information:
http://krieger.jhu.edu/envs/requirements/major/

The Environmental Science major requires a total of 71-77.5 credits to complete. All courses must be taken for a letter grade, and students must earn a grade of C- or better to apply the course to the major. All ENVS majors are encouraged to consider studying abroad at some point during their undergraduate years to develop a more global, culturally sensitive perspective on environmental and sustainability issues.
Appropriate transfer or study abroad courses may be counted toward the major at the discretion of the ENVS Director of Undergraduate Studies (DUS). Students are not permitted to double-major in both Environmental Science and Environmental Studies.

**Common ENVS Core**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.270.103</td>
<td>Introduction to Global Environmental Change</td>
<td>3</td>
</tr>
<tr>
<td>AS.271.107</td>
<td>Introduction to Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>AS.270.205</td>
<td>Introduction to Geographic Information Systems and Geospatial Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AS.270.336</td>
<td>Freshwater Systems</td>
<td>3</td>
</tr>
<tr>
<td>or EN.570.205</td>
<td>Ecology</td>
<td></td>
</tr>
<tr>
<td>or EN.570.403</td>
<td>Ecology</td>
<td></td>
</tr>
<tr>
<td>AS.271.401</td>
<td>Environmental Ethics</td>
<td>3</td>
</tr>
<tr>
<td>AS.271.403</td>
<td>Environmental Policymaking and Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AS.271.505</td>
<td>Senior Capstone Experience</td>
<td>4</td>
</tr>
<tr>
<td>AS.271.509</td>
<td>Applied Experience</td>
<td>1</td>
</tr>
<tr>
<td>AS.180.102</td>
<td>Elements of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.190.102</td>
<td>Introduction To Comparative Politics</td>
<td>3</td>
</tr>
<tr>
<td>or AS.190.111</td>
<td>Introduction to Global Studies</td>
<td></td>
</tr>
<tr>
<td>or AS.190.209</td>
<td>Contemporary International Politics</td>
<td></td>
</tr>
<tr>
<td>or AS.190.226</td>
<td>Global Governance</td>
<td></td>
</tr>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>or AS.030.103</td>
<td>Applied Chemical Equilibrium w/lab</td>
<td></td>
</tr>
<tr>
<td>AS.110.106</td>
<td>Calculus I (Biology and Social Sciences)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.108</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>AS.230.205</td>
<td>Introduction to Social Statistics</td>
<td>4</td>
</tr>
<tr>
<td>or AS.280.345</td>
<td>Public Health Biostatistics</td>
<td></td>
</tr>
<tr>
<td>or EN.553.111</td>
<td>Statistical Analysis I</td>
<td></td>
</tr>
<tr>
<td>or EN.553.211</td>
<td>Probability and Statistics for the Life Sciences</td>
<td></td>
</tr>
<tr>
<td>or EN.553.310</td>
<td>Probability &amp; Statistics</td>
<td></td>
</tr>
<tr>
<td>or EN.553.311</td>
<td>Probability and Statistics for the Biological Sciences and Engineering</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 43

**Natural Sciences Core**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.107</td>
<td>Calculus II (For Biological and Social Science)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td></td>
</tr>
<tr>
<td>If AS.030.103 was not taken:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>Choose 2 of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS.020.151</td>
<td>General Biology I</td>
<td>3</td>
</tr>
<tr>
<td>AS.020.152</td>
<td>General Biology II</td>
<td>3</td>
</tr>
<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.103</td>
<td>General Physics for Biological Science Majors</td>
<td></td>
</tr>
<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.104</td>
<td>General Physics/Biology Majors II</td>
<td></td>
</tr>
<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
<td></td>
</tr>
</tbody>
</table>

Lab Experiences: 3 approved science lab courses are required, either as separate 1-2-credit lab courses or as part of 4-5-credit lecture courses that include a lab section. Approved labs include but are not limited to:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.020.153</td>
<td>General Biology Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.020.154</td>
<td>General Biology Lab II</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>AS.270.221</td>
<td>The Dynamic Earth Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>AS.270.337</td>
<td>Freshwater Systems Lab</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Credits** 16

**Focus Area**

Each student should work with their adviser to choose a coherent suite of elective courses totaling at least 15 credits, 12 of which are at the 300-level or above. These courses should be related to a focus area of relevance to the student's individual interests and career plans. The focus area can center around a particular environmental or sustainability topic or a particular disciplinary lens through which a variety of environmental issues can be viewed. Suggested topical focus areas include but are not limited to: climate change, oceans, and energy; water and soil; ecology and conservation; and environmental health. Appropriate focus area courses are those that concentrate directly on environmental or sustainability issues. The ENVS Director of Undergraduate Studies (DUS) distributes a list of approved focus area courses prior to the registration period for each semester, and approval for other courses can be sought by emailing the major adviser and DUS. Consult the ENVS advising guide on the program's website for additional information: http://krieger.jhu.edu/envs/requirements/major/

With the adviser approval, choose 15 credits of coursework related to a focus area, at least 12 credits of which are at the 300-level or above.

**Total Credits** 15

**Sample Program of Study for the Environmental Science Major**

**Freshman**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AS.270.103 Introduction to Global Environmental Change</td>
<td>3 AS.271.107 Introduction to Sustainability</td>
</tr>
<tr>
<td>10</td>
<td>AS.030.101 Introductory Chemistry I</td>
<td>3 AS.030.102 Introductory Chemistry II</td>
</tr>
<tr>
<td></td>
<td>AS.110.108 Calculus I</td>
<td>4 AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AS.270.336 Freshwater Systems</td>
<td>3 AS.270.205 Introduction to Geographic Information Systems and Geospatial Analysis</td>
</tr>
<tr>
<td>10</td>
<td>AS.270.337 Freshwater Systems Lab</td>
<td>1 AS.020.152 General Biology II</td>
</tr>
</tbody>
</table>
Environmental Studies Major (B.A.)

The Bachelor of Arts in Environmental Studies is an interdisciplinary major that introduces students to Earth system science and the ways in which humans interact with the environment. It equips students to use a variety of tools, such as policy, science, communication, and individual and societal behavior change, to solve environmental and sustainability problems but focuses on the perspectives and tools of the social sciences. Environmental Studies majors must complete a set of core courses common to both ENVS majors, including a senior capstone course and an applied experience involving either research or an internship, plus three additional social science core courses and a suite of electives selected to form an adviser-approved focus area.

The ENVS senior capstone seminar involves the planning and execution of a tangible, group sustainability project or off-campus. All ENVS majors must enroll in the capstone course in the fall semester of their senior year. The applied experience can be completed during any semester including summers and involves at least 80 hours of supervised, hands-on experience working with environmental or sustainability issues. Appropriate transfer courses taken abroad may be counted toward the major at the discretion of the ENVS Director of Undergraduate Studies (DUS). Students are not permitted to double-major in both Environmental Studies and Environmental Science.

Common ENVS Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.270.103</td>
<td>3</td>
<td>Introduction to Global Environmental Change</td>
</tr>
<tr>
<td>AS.270.107</td>
<td>3</td>
<td>Introduction to Sustainability</td>
</tr>
<tr>
<td>AS.270.205</td>
<td>3</td>
<td>Introduction to Geographic Information Systems and Geospatial Analysis</td>
</tr>
<tr>
<td>AS.270.336</td>
<td>3</td>
<td>Freshwater Systems</td>
</tr>
<tr>
<td>AS.270.308</td>
<td>3</td>
<td>Population/Community Ecology</td>
</tr>
<tr>
<td>AS.271.401</td>
<td>3</td>
<td>Environmental Ethics</td>
</tr>
<tr>
<td>AS.271.403</td>
<td>3</td>
<td>Environmental Policymaking and Policy Analysis</td>
</tr>
<tr>
<td>AS.271.505</td>
<td>4</td>
<td>Senior Capstone Experience</td>
</tr>
<tr>
<td>AS.271.509</td>
<td>1</td>
<td>Applied Experience</td>
</tr>
<tr>
<td>AS.180.102</td>
<td>3</td>
<td>Elements of Microeconomics</td>
</tr>
<tr>
<td>AS.190.102</td>
<td>3</td>
<td>Introduction To Comparative Politics</td>
</tr>
<tr>
<td>AS.230.205</td>
<td>4</td>
<td>Introduction to Social Statistics</td>
</tr>
<tr>
<td>AS.180.106</td>
<td>4</td>
<td>Calculus I (Biology and Social Sciences)</td>
</tr>
<tr>
<td>AS.230.209</td>
<td>3</td>
<td>Contemporary International Politics</td>
</tr>
<tr>
<td>AS.230.226</td>
<td>3</td>
<td>Global Governance</td>
</tr>
<tr>
<td>AS.030.101</td>
<td>3</td>
<td>Introductory Chemistry I</td>
</tr>
<tr>
<td>AS.030.103</td>
<td>3</td>
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<td>AS.030.104</td>
<td>4</td>
<td>Calculus I</td>
</tr>
<tr>
<td>AS.280.345</td>
<td>4</td>
<td>Public Health Biostatistics</td>
</tr>
<tr>
<td>EN.553.111</td>
<td>3</td>
<td>Statistical Analysis I</td>
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<td>EN.553.211</td>
<td>3</td>
<td>Probability and Statistics for the Life Sciences</td>
</tr>
<tr>
<td>EN.553.310</td>
<td>3</td>
<td>Probability &amp; Statistics</td>
</tr>
<tr>
<td>EN.553.311</td>
<td>3</td>
<td>Probability and Statistics for the Biological Sciences and Engineering</td>
</tr>
</tbody>
</table>

Total Credits: 43

Social Sciences Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.180.101</td>
<td>3</td>
</tr>
<tr>
<td>AS.230.202</td>
<td>3</td>
</tr>
<tr>
<td>AS.271.302</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 9

Focus Area

Each student should work with their adviser to choose a coherent suite of elective courses totaling at least 12 credits, which are at the 300-level or above. These courses should be related to a focus area of relevance to the student's individual interests and career plans. The focus area can center around a particular environmental or sustainability topic or a particular disciplinary lens through which a variety of environmental issues can be viewed. Suggested topical focus areas include but are not limited to: sustainable development; environmental policy and governance; ecology and conservation; and environmental health. Appropriate focus area courses are those that concentrate directly on environmental or sustainability issues. The ENVS Director of Undergraduate Studies (DUS) distributes a list of approved focus area courses prior to the registration period for each semester, and
approval for other courses can be sought by emailing the major adviser and DUS. Consult the ENVS advising guide on the program's website for additional information: http://krieger.jhu.edu/envs/requirements-major/

With adviser approval, choose 12 credits of coursework related to a focus area, at least 9 credits of which are at the 300-level or above

Total Credits 12

Sample Program of Study for the Environmental Studies Major

**Freshman**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.270.103 Introduction to Global Environmental Change</td>
<td>3</td>
<td>AS.271.107 Introduction to Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.101 Elements of Macroeconomics</td>
<td>3</td>
<td>AS.180.102 Elements of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.190.111 Introduction to Global Studies</td>
<td>3</td>
<td>AS.230.205 Introduction to Social Statistics</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.106 Calculus I (Biology and Social Sciences)</td>
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Total Credits 13

**Sophomore**

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</tr>
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<tbody>
<tr>
<td>AS.270.336 Freshwater Systems</td>
<td>3</td>
<td>AS.270.205 Introduction to Geographic Information Systems and Geospatial Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
<td>3</td>
<td>AS.230.202 Research Methods for the Social Sciences</td>
<td>3</td>
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</table>

Total Credits 6

**Junior**

<table>
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<tbody>
<tr>
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<td>AS.271.401 Environmental Ethics</td>
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<tr>
<td>AS.271.302 Exploring Nature</td>
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<td>AS.271.509 Applied Experience</td>
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Total Credits 9

**Senior**

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<tbody>
<tr>
<td>AS.271.505 Senior Capstone Experience</td>
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<td>AS.271.403 Environmental Policymaking and Policy Analysis</td>
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<td>Focus area course</td>
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Total Credits 7

**Honors in the ENVS Majors**

To qualify for honors in an ENVS major, a student must:

- Earn a cumulative GPA of 3.5 in the courses taken to fulfill the major requirements, as determined at the end of the second-to-last semester of the student's enrollment.
- Successfully complete 3 or more credits of independent research or senior thesis involving an environmental or sustainability-related project.
- Earn a rating of good or excellent on the final product of the research project, as determined by the faculty research adviser.
- Present the results of the research orally in an appropriate JHU department.

**Environmental Studies Minor**

The Environmental Studies minor is designed to allow students majoring in other disciplines to develop additional expertise in environmental issues and sustainability. It consists of 18 credits of environmental or sustainability-related courses, including two introductory core courses. At least 6 credits must be at the 300-level or above. Students are encouraged to select electives from relevant courses in both the social and natural sciences but can tailor their coursework to fit their particular interests and career goals. Appropriate elective courses are those focused directly on environmental or sustainability issues. The ENVS Director of Undergraduate Studies (DUS) distributes a list of approved courses for the minor prior to the registration period for each semester, and approval for other courses can be sought by emailing the DUS. All courses must be taken for a letter grade, and students must earn a grade of C- or better to apply the course to the minor.

<table>
<thead>
<tr>
<th>Fall</th>
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<th>Spring</th>
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<tr>
<td>AS.270.103 Introduction to Global Environmental Change</td>
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<td>AS.271.107 Introduction to Sustainability</td>
<td>3</td>
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<td>AS.270.336 Freshwater Systems</td>
<td>3</td>
<td>AS.270.205 Introduction to Geographic Information Systems and Geospatial Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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</tr>
<tr>
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<td>3</td>
<td>AS.271.509 Applied Experience</td>
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<tr>
<td>Focus area course</td>
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<td>Focus area course</td>
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Total Credits 18

**B.A./M.S. Option for Johns Hopkins ENVS Majors**

Undergraduates majoring in Environmental Science or Environmental Studies (ENVS) may apply for accelerated status toward an M.S. in Environmental Science and Policy (ESP) through the JHU Krieger School of Arts & Sciences’ Advanced Academic Programs. Students should refer to the Graduate tab for more information.

**Graduate Programs**

**Requirements for Admission**

Applications must submit transcripts, Graduate Record Examination scores (aptitude exam only), and supporting letters to show their ability to do advanced study. The applicant should have his/her GRE scores, verbal and quantitative aptitude, sent to the department before the January 1 deadline for filing applications for admission.

The department expects applicants for advanced degrees to have completed undergraduate training in the basic sciences and mathematics. Normally this includes mathematics through at least integral calculus and a year's course each in physics, chemistry, and...
biology. Further undergraduate study in one or more of these subjects or in mathematics is highly desirable for all programs in the Earth sciences; additional mathematics is essential for geophysics, atmospheric sciences, and dynamical oceanography. Extensive undergraduate work in Earth sciences is not a requirement for admission. If students lack formal training in this area or have deficiencies in the other related sciences, they may be admitted but will have to allow additional time in the graduate program to make up for deficiencies in their preparation.

JUMP to Requirements for the B.A./M.S. Option for Johns Hopkins Undergraduate ENVS Majors. (p. 187)

Requirements for Advanced Degrees
Candidates for the Ph.D. must take courses and meet requirements specified by their advisory committee; must pass a comprehensive examination before a departmental committee and an oral examination administered by the Graduate Board of the university; and must submit an acceptable dissertation involving significant original research. A minimum of two consecutive terms registered as a full-time student is required.

The department rarely accepts candidates for the M.A. degree alone, but Ph.D. students can, with the consent of their advisors, complete a program that will qualify them for the M.A. degree at the end of the second year. Candidates for this degree must pass a comprehensive examination before a departmental committee, and must satisfy the residency requirement specified above for the Ph.D. degree. A student’s advisor may require an essay demonstrating research capability.

For further information about graduate study in the Earth and planetary sciences contact the Chair, Department of Earth and Planetary Sciences.

Fields of Graduate Study and Research
The department offers a range of fields of study covering Earth, Space and Environmental Sciences. In recent years we have invested in hiring new faculty in Planetary Sciences, Geosciences and Environmental Science, with seven new assistant professors and two new full professors. What links all of our fields of research together is a focus on treating individual processes- ranging from the formation of rocks to the distribution of organisms- as part of a system, with implications for and feedbacks from other parts of the system. The description below provides a rough grouping of the research areas involved and the faculty associated with each one. Interested applicants are urged to consult individual group web sites for more detail as well as to view presentations made as part of the department's 50th Anniversary celebration (http://eps.jhu.edu/events/50th-anniversary-symposium/). Prospective students should contact individual faculty members with whom they are interested in working. Students with interests that cross disciplinary boundaries or who use techniques found in different groups are strongly encouraged to apply as we believe that the most exciting questions to pursue in science today involve interdisciplinary research.

Planetary Sciences
In the last four years the department has hired four new faculty members in the Planetary Sciences who study bodies ranging from Mercury to Pluto to exoplanets. Key questions include: What role do planetary atmospheres play in the habitability of planets and the origin and/or evolution of life? (Hörst) What can we learn from the sedimentary record on Mars about what processes have shaped the evolution of that planet? (Lewis) How do planetary dynamos work? (Stanley) How can we use the wealth of spectra coming to us from new sensors to learn about planetary atmospheres? (Sing) A common thread across all of this work is the question of habitability- what sort of things need to happen in order for a planet to be able to support life, and for us to detect it? These questions are addressed using a combination of observation (ground-based telescopes and robotic spacecraft), laboratory experimentation, theoretical modeling, and Earth-analog field studies. The program requires an interdisciplinary focus, drawing from a wide variety of fields including astronomy, geosciences, physics and chemistry. Research often includes data from active planetary exploration missions. EPS faculty include members of the Cassini mission to the Saturn system, New Horizons mission to the Pluto system, and Mars Science Laboratory Rover teams, along with a number of proposed future missions to Venus, and Titan, and other worlds.

Students are encouraged to take courses in astrophysics, chemistry, physics, applied mathematics, computer science, and engineering to gain the comprehensive background necessary for interdisciplinary research. The best undergraduate preparation is a broad background in physics, applied mathematics, chemistry, or earth science. Advanced undergraduate courses in these fields (including differential equations, linear algebra, classical mechanics, electricity and magnetism, thermodynamics, organic, and physical chemistry) are strongly recommended. The EPS Planetary Science research program has close ties with the Space Department of the JHU Applied Physics Laboratory (APL), and students may be co-advised by APL researchers. Students in the department additionally benefit from the local availability of outside institutions including the Space Telescope Science Institute (co-located on the JHU campus), NASA Goddard Space Flight Center, the Carnegie Institution for Science, and the Smithsonian Institution.

Deep Earth Geosciences
This area focuses on understanding chemical and physical processes deep within the Earth and other planetary bodies. Key questions include: How do materials behave at very high temperatures and pressures, and what are the implications of this behavior for the whole planet system? (Wicks, Sverjensky) By what processes and at what rates do petrologic and tectonic systems evolve, and what are the feedbacks with the biosphere? (Viete). How is the Earth's geodynamo changing with time - and why? (Stanley) The interdisciplinary techniques used to study these questions include X-ray scattering and laser studies of planet-building minerals at extreme conditions (Wicks), geological field work and observation, and spatially-resolved geochemical and geochronological analysis of crystalline rocks (Viete) and theoretical and laboratory studies of mineral-fluid interactions (Sverjensky).

Aqueous geochemical studies centered in the Sverjensky group focus on the role of water in the evolution of Earth through deep time, particularly the linkages between water in the deep Earth and the near-surface environment. It involves quantitative geochemical modeling of the chemistry of water-rock interactions from Earth’s surface into the upper mantle. Students participate in research involving the interpretation of experimental studies of water-rock interactions in terms of fundamental properties of aqueous inorganic and organic species over extreme ranges of pressure and temperature. Developing a thermodynamic characterization of the behavior of fluids at elevated pressures and temperatures enables exciting research into topics such as the origins of diamonds, the development and evolution of the continents and the potential roles of abiogenic hydrocarbons in Earth’s deep carbon cycle. Collaborations with experimental laboratories enable a wide range of training in combined theoretical and experimental studies of the role of fluids in the history of Earth and other planets.

Students applying in this area will come from a wide variety of backgrounds, including class and research experience in chemistry, mechanical engineering, material science and condensed matter
physics. Recommended classes, depending on the research track, include crystallography, mineralogy, petrology, and field geology, thermodynamics, quantum mechanics, continuum mechanics, and mineral physics.

Research within the fields of petrology and tectonics centered in the Viite group focus on questions of length scales, time scales and drivers. It seeks to understand the tectonic processes that operate at plate margins, the nature and utility of the rock record, and interactions between the solid Earth and biosphere. Current foci include crustal heating and the tectonic significance of metamorphic rocks, scales of tectonic organization and episodicity, and petrologic records of seismicity. Student projects begin in the field, first involving mapping, measurement, observation and sampling. With field context established, geological questions are further interrogated through micro-scale structural, geochemical and geochronological analysis of sampled materials. Simple analytical and numerical modeling of processes of deformation and heat and material transfer are used to reproduce observed features and constrain processes recorded in landscapes and rocks.

Students applying in this area should enjoy field work and the outdoors and will preferably have some background and interest in chemistry, physics and/or mathematics. Recommended classes, depending on research track, may include field geology, petrology and petrography, structural geology, sedimentology, transport phenomena, thermodynamics, and rock mechanics.

**Geoscience in the Surface Environment**

This area focuses on what the geological record can tell us about the evolution of life on Earth and its interaction with climate. A particular focus of this group is the use of isotope geochemistry to examine the carbon, nitrogen, oxygen and sulfur cycles, and to link changes in the rock record to the actual organisms present at the time. Key questions include: What was the physical and chemical context in which the earliest complex life formed? (Smith) How do environmental conditions and/or biological communities influence geochemical signatures found in the rock record? (Gomes)

Students working in this area will learn a range of skills- including the field geology methods necessary to put samples in context, how to make isotopic measurements necessary to characterize the large-scale chemical environment, and how to use this information in conjunction with quantitative and modeling tools to investigate the coevolution of life and the Earth surface. Additionally, the Smith group has expertise in the paleontology of Ediacaran organisms and the Gomes group uses the tools of microbial ecology. Using multi-disciplinary tools, researchers in this area seek to use insight about the coevolution of life and the Earth surface to provide context to understand modern climate change and investigate the tools that can be used to search for life on other planets.

**Oceans, Atmospheres and Climate**

The Oceans, Atmospheres and Climate area focuses on understanding planetary-scale and regional dynamics with implications for planetary climates, including anthropogenic climate change. The philosophy underlying the department’s program is a rigorous and thorough process-based understanding of the climate system, with a grounding in fluid dynamics, energy exchange, and relevant chemical and biological interactions. Researchers in the department address these processes with theory, laboratory and numerical experiments, and study both remotely sensed and in situ field observations. Johns Hopkins is a member of the University Corporation for Atmospheric Research.

The best preparation for graduate study in this program is an undergraduate degree in physics, applied mathematics, mechanical engineering, or another parent science such as chemistry, oceanography, meteorology, or geology/geophysics. Prior course work in fluid dynamics, while highly desirable, is not mandatory to pursue graduate study in this area. It is strongly recommended to have a broad background in the parent sciences, specialization in one of them, and at least three years of undergraduate mathematics. Research experience is also desirable.

Research in physical oceanography (involving Profs. Haine, Gnanadesikan and Waugh) focuses on the processes that maintain the global ocean circulation and the ocean’s role in climate and global biogeochemical cycling. In particular, attention is on the role of waves, eddies, and small-scale mixing in controlling the ocean’s part in Earth’s heat and freshwater balances. We also study advection, stirring, and mixing processes in the interior ocean and their roles in dispersing atmospheric trace gases and nutrients. The research program also includes computational oceanography, with links to other Hopkins departments and centers.

Research in atmospheric dynamics, (involving Prof. Waugh) focuses on large-scale dynamics, the transport of trace constituents, and understanding the composition of the global atmosphere (e.g., distributions of stratospheric ozone and tropospheric water vapor). Current interests include stratospheric vortex dynamics, troposphere-stratosphere couplings, transport and mixing processes, and global modeling of chemical constituents.

Research in hydroclimate, including atmospheric processes that drive precipitation and terrestrial hydrology, is a focus of Prof. Zaitchik’s group. This research employs satellite image analysis, numerical modeling, and field observation to build a process-based understanding of the ways in which climate shapes landscape and vice versa. Current interests include drivers of rainfall variability in the tropics, coupled natural-human systems, seasonal forecast, and the application of hydroclimate analysis to studies of water resources, agriculture, and human health.

Research on climate and radiation is found across all of the research groups in this area and includes study of the global climate system and its response to radiative forcing due to changes in greenhouse gases and solar luminosity, the feedback effects of water vapor and clouds, and the radiative and hydrological effects of aerosols. These studies involve global and regional scale modeling, and the analysis and interpretation of satellite observations.

Additionally Prof. Gnanadesikan’s group conducts research in global biogeochemical cycling, focusing on applying and developing large-scale computational models that can be combined with observations remotely sensed data to characterize cycling of key elements (including carbon, nitrogen, and oxygen) in the earth system. Opportunities exist to link this work to the observational and theoretical geochemistry work done in the department as well as to simulate key periods and transitions in Earth History.

**Ecology: Organisms, Ecosystems and Environmental Change**

This area of research involves understanding how organisms interact with each other and with the physical world, and how humans affect ecological processes and ecosystems. Questions include: How does past and present land use change affect species distribution, community assembly and biogeographical cycles? (Avolio, Szlavecz)

How does biodiversity, especially invasive species, affect the rates of soil biogeochemical cycling the production of greenhouse gasses? (Szlavecz)? How do urban environments shape the ecology and evolution of plants?
and soil organisms within these systems (Avolio, Szelávez)? What are the linkages between plant community composition and ecosystem function and/or services in grasslands and cities (Avolio)? How resistant or resilient are grasslands to global change drivers and what is their capacity to adapt to new environmental conditions (Avolio)? Students are invited to participate in ongoing collaborations at two Long Term Ecological Research Sites (Baltimore Ecosystem Study and Konza Prairie Biological Station), the Smithsonian Environmental Research Center, the Beltsville Agricultural Research Center, or to design an original research project under the advisement of our faculty.

All Ph.D. students are expected to have a background of general biology, physics, chemistry and calculus. Deficiencies can be made up in the first semesters at Hopkins. Students take a core program of statistics, Earth history, stable isotope geochemistry, and ecology. In conjunction with the Department of Environmental Health and Engineering, Earth and Planetary Sciences offers course work opportunities in aquatic chemistry, microbial ecology, geospatial analysis, and analytical environmental chemistry.

Financial Aid
The university makes available to the department a number of Gilman Fellowships, which provide for complete payment of tuition, together with Johns Hopkins' fellowships and graduate assistantships that carry a nine-month stipend. Graduate assistantships cannot require more than 10 hours a week of service to the department, and all recipients of financial aid carry a full program of study. In addition, a number of special and endowed fellowships pay as much or more. In many areas of study, summer support is also available.

Applications for admission to graduate study and financial aid (including all supporting documents and GRE scores) should be submitted to the department before January 1.

B.A./M.S. Option for Johns Hopkins ENVS Majors
Undergraduates majoring in Environmental Science or Environmental Studies (ENVS) may apply for accelerated status toward an M.S. in Environmental Science and Policy (ESP) through the JHU Krieger School of Arts & Sciences’ Advanced Academic Programs. These students should declare their intention to pursue the M.S. during their junior year or early in their senior year to their adviser and to the Director of the ESP Program, Jerry Burgess (Jerry.burgess@jhu.edu). ENVS students may apply up to three courses taken as undergraduates toward the M.S. in Environmental Science and Policy thereby leaving only seven more courses to complete the M.S. following receipt of their bachelor’s degree.

Application
ENVS students may apply for the B.A./M.S. anytime during the senior year or after conferral of their undergraduate degree. The application procedure is the same as that of other AAP applicants and details are found online at: http://advanced.jhu.edu/. Students admitted to the B.A./M.S. program will be assigned a graduate adviser but will also continue to be advised by their ENVS adviser for all matters concerning the bachelor’s degree.

Course Requirements For B.A./M.S.
ENVS students will receive two separate degrees, so the requirements of both degrees must be fulfilled. Students cannot earn the M.S. degree without completion of the B.A. or B.S., however, students who do not complete the M.S. retain their B.A. or B.S. ENVS students pursuing the M.S. may opt for either the general ESP degree or a concentration. Up to three courses completed while an undergraduate can count toward the ten courses required for the M.S. Two of the following courses can be used to satisfy the corresponding core course requirements for the M.S. in Environmental Science and Policy.

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<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>AS.270.224</td>
<td>Oceans &amp; Atmospheres</td>
<td>3</td>
</tr>
<tr>
<td>AS.270.308</td>
<td>Population/Community Ecology</td>
<td>3</td>
</tr>
<tr>
<td>AS.271.403</td>
<td>Environmental Policymaking and Policy Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

(Note that the Environmental Policymaking and Policy Analysis course is a combined ENVS undergraduate and ESP masters class.)

If a student wishes to apply a third course to both their ENVS B.A. or B.S. and their ESP M.S., the course must be approved by the graduate adviser and must be at the 300- to 600- level with content germane to environmental science and policy.

For current faculty and contact information go to http://eps.jhu.edu/people/

Faculty
Chair
Anand Gnanadesikan
biogeochemical oceanography, geophysical fluid dynamics.

Professors
Thomas Haine
physical oceanography.

Sabine Stanley
planetary magnetism, planetary interiors, geophysics.

Darryl F. Strobel
planetary atmospheres and astrophysics.

Dimitri Sverjensky
molecular surface geochemistry and environmental geochemistry.

Darryn W. Waugh
atmospheric dynamics.

Associate Professor
Benjamin Zaitchik
climate dynamics, surface hydrology.

Assistant Professors
Meghan Avolio
plant and urban ecology.

Maya Gomes
stable isotope geochemistry, geobiology.

Sarah Horst
atmospheric chemistry, planetary atmospheres.

Kevin Lewis
planetary geology and geophysics.

Emmy Smith
sedimentary geology, biostratigraphy and Earth history.

Daniel Viete
metamorphic petrology, structural geology and tectonics.

June Wicks
mineral physics, planetary interiors.
Professors Emeriti
John M. Ferry
metamorphic geology.

George W. Fisher
global earth systems and religious ethics.

Bruce D. Marsh
igneous petrology and geophysics.

Peter I. Olson
geophysical fluid dynamics.

David R. Veblen
crystallography.

Research/Teaching Faculty
Jerry Burgess
Lecturer: environmental science and studies.

Xin Chen
Lecturer: civil engineering.

Rebecca Kelly
Associate Teaching Professor: environmental science and studies.

Jomar Malodano
Lecturer: environmental science and studies.

Alexios Monopolis
Senior Lecturer: environmental science and studies.

Richard Stolarski
Research Professor: atmospheric chemistry.

Katalin Szlavecz
Research Professor: soil ecology.

Joint Appointments
Andrew W. Beck
Adjunct Assistant Professor, Earth and Planetary Sciences; Senior Staff Scientist, Applied Physics Lab

Gabriel Bever
Assistant Professor, Functional Anatomy and Evolution, School of Medicine

Siobhan Cooke
Assistant Professor, Functional Anatomy and Evolution, School of Medicine

Jocelyne DiRuggiero
Associate Research Professor, Biology.

Ciaran Harman
Assistant Professor, Environmental Health and Engineering.

Michael Harower
Assistant Professor, Near Eastern Studies.

Kevin J. Hemker
Professor, Mechanical Engineering.

Takeru Igusa
Professor, Civil Engineering.

Scot Miller
Assistant Professor, Environmental Health and Engineering

K.T. Ramesh
Professor, Mechanical Engineering.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.270.102. Freshman Seminar: Conversations with the Earth. 3.0 Credits.
A discussion of topics on Earth’s origin, evolution, and habitability. Students will be introduced to the role that scientific thinking and process play in research and our understanding of Earth systems. We will cover a broad foundation of knowledge of Earth sciences, including solid earth, atmospheric, and oceanic systems, as well as topics concerning the origin of life, evolution, ecosystems, and mass extinctions. And we will discuss the relation of these systems to societal concerns such as climate change, energy resources, mineral and ore needs in industry, and nuclear waste storage and risk assessment. We are returning to the original seminar format for this class, with a limit of 15 students. We are looking for students who are willing to engage in frequent class discussion with instructors and classmates to ensure they acquire a broad understanding of the subject matter. This will be a 3 credit course with homework to be completed each week and a term paper submitted at the end of the semester.
Instructor(s): A. Charrier De Assis
Area: Natural Sciences.

AS.270.103. Introduction to Global Environmental Change. 3.0 Credits.
A broad survey of the Earth as a planet, with emphasis on the processes that control global changes. Topics include: the structure, formation, and evolution of the Earth, the atmosphere, oceans, continents, and biosphere. Special attention is given to present-day issues, such as global climate change, natural hazards, air pollution, resource depletion, human population growth, habitat destruction, and loss of biodiversity. Open to all undergraduates.
Instructor(s): D. Waugh; K. Szlavecz
Area: Natural Sciences.

AS.270.110. Freshman Seminar: Sustainable + Non-Sustainable Resources. 1.0 Credit.
An introduction to the important resources involved in the origin and production of oil, natural gas, coal, cement, metals and geothermal fluids.
Instructor(s): D. Sverjensky
Area: Natural Sciences.

AS.270.111. Freshman Seminar: The Story of Earth. 1.0 Credit.
The four and a half billion year story of Earth’s global changes focusing on the co-evolution of Earth and Life.
Instructor(s): D. Sverjensky
Area: Natural Sciences.

AS.270.112. The Changing Arctic Environment: Problem or Opportunity?. 3.0 Credits.
The Arctic is warming three times faster than the global-mean rate. In this course we will be studying this phenomenon and its consequences by looking at the interconnected parts of the Arctic climate system (ocean, atmosphere, and ice), how they are changing, and which socio-economic opportunities and environmental challenges arise from these changes.
Instructor(s): R. Gelderloos
Area: Natural Sciences.
AS.270.113. Freshman Seminar: Environmental Poisons. 1.0 Credit.
An exploration of the occurrence and potential effects of poisons in the environment, from naturally occurring ones such as arsenic to those that may be introduced by mankind such as nuclear waste.
Instructor(s): D. Sverjensky
Area: Natural Sciences.

AS.270.114. Guided Tour: The Planets. 3.0 Credits.
An introduction to planetary science and planetary exploration primarily for non-science majors. A survey of concepts from astronomy, chemistry, geology, and physics applied to the study of the solar system.
Instructor(s): S. Stanley
Area: Natural Sciences.

AS.270.116. Freshman Seminar: An Introduction to Climate Change. 3.0 Credits.
This course introduces the main physical components of the Earth's climate systems and their documented and forecasted changes. The first part of the course presents evidences of climate change in Earth's history, and introduces the main natural and anthropogenic drivers of climate change. The second part of the course focuses on future climates, and includes modules about climate modeling, building of emission scenarios, geoengineering, emission reductions and adaptability. The course is highly interdisciplinary, exploring the relationships among climate science, policy, ecology, economy and ethics. Freshmen Only. No prerequisites required.
Instructor(s): V. Aquila
Area: Natural Sciences.

AS.270.125. People and the Earth: The Science Behind Our Interactions. 3.0 Credits.
This course is designed to introduce non-science students to the ways in which humans and the Earth interact. These interactions go in both directions, with Earth processes and materials affecting human society, and human activities altering the Earth. Topics include natural disasters, natural resources, and environmental issues rooted in geology; and they are examined from both a historical perspective and in the context of current events. Class time involves active learning and hands-on experiences. Course open to freshmen, sophomores, and juniors. Seniors by instructor permission only.
Instructor(s): R. Kelly
Area: Natural Sciences.

AS.270.205. Introduction to Geographic Information Systems and Geospatial Analysis. 3.0 Credits.
The course provides a broad introduction to the principles and practice of Geographic Information Systems (GIS) and related tools of Geospatial Analysis. Topics will include history of GIS, GIS data structures, data acquisition and merging, database management, spatial analysis, and GIS applications. In addition, students will get hands-on experience working with GIS software.
Instructor(s): X. Chen
Area: Engineering, Natural Sciences.

AS.270.220. The Dynamic Earth: An Introduction to Geology. 3.0 Credits.
Basic concepts in geology, including plate tectonics; Earth's internal structure; geologic time; minerals; formation of igneous, sedimentary, and metamorphic rocks; development of faults, folds and earthquakes; geomagnetism. Corequisite (for EPS Majors): AS.270.221; optional for others. The course is introductory and open to undergraduates at all levels; freshmen are encouraged to enroll.
Prerequisites: AS.030.101 OR ( AS.171.101 AND AS.171.102 ) or equivalent.
Instructor(s): D. Viete; E. Smith
Area: Natural Sciences.

AS.270.221. The Dynamic Earth Laboratory. 2.0 Credits.
This course is a hands-on learning experience for introductory geological concepts and techniques using geological tools, such as mineral/rock samples, microscopes, and maps. Field trips are its essential part. The course is open to undergraduates at all levels; freshmen who wish to get their hands (and boots) dirty are encouraged to enroll.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Corequisites: AS.270.220
Instructor(s): D. Viete; E. Smith
Area: Natural Sciences.

AS.270.222. Mineralogy. 4.0 Credits.
An introduction to the properties, occurrence, and origin of the basic constituents of the Earth, including minerals and rocks. Introductory training in the recognition of minerals and rocks in the laboratory and the field.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. Wicks
Area: Natural Sciences.

AS.270.224. Oceans & Atmospheres. 3.0 Credits.
A broad survey of the Earth's oceans and atmospheres, and their role in the environment and climate. Topics covered include waves, tides, ocean and atmosphere circulation, weather systems, tornadoes and hurricanes, El Niño, and climate change. For science and engineering majors
Instructor(s): A. Gnanadesikan; T. Haine
Area: Natural Sciences.

AS.270.302. Aqueous Geochemistry. 3.0 Credits.
Modeling the chemistry of water-rock interactions from weathering and riverine development at Earth's surface to hot springs at depth, fluids in subduction zones in Earth's interior, and the ancient fluids preserved in fluid inclusions. Thermodynamic basis for the calculation of equilibria and irreversible chemical mass transfer involving minerals and aqueous species at low and high temperatures and pressures. The course culminates with practical examples of research interest to individual participants.
Prerequisites: (AS.030.101 AND AS.030.102) AND (AS.270.220 AND AS.270.221) or equivalents.
Instructor(s): D. Sverjensky
Area: Natural Sciences.

AS.270.303. Earth History. 3.0 Credits.
This course will explore the evolution of life in the context of environmental, ecological, and geological changes to the Earth surface system. The goal of the class is to provide students with an understanding of how geological and paleontological records provide insight into the origin(s) of life, oxygenation of the atmosphere, the evolution of multicellularity, evolutionary radiations and extinctions, and modern global change.
Prerequisites: AS.270.103 OR AS.270.220 OR AS.270.224; or permission of the instructor.
Instructor(s): M. Gomes
Area: Natural Sciences.
AS.270.304. Igneous Geology and Volcanology. 3.0 Credits.
This course provides an introduction to igneous and volcanic processes on Earth and other planetary bodies. Focus is placed on linking observations made on rocks in hand sample and outcrop to Earth/planetary processes. The course will review crystal chemistry of major rock-forming minerals and progress through how igneous rocks form. Volcanism, including eruption processes, landforms and tectonic settings, will be reviewed. Labs will include rock identification, study of thin sections under microscope and field trips. Teaching is geared toward the graduate and advanced undergraduate level. Recommended course background: AS.270.220 and AS.270.221, or instructor permission. Instructor(s): A. Beck
Area: Natural Sciences.

AS.270.305. Energy Resources in the Modern World. 3.0 Credits.
This in-depth survey will inform students on the non-renewable and renewable energy resources of the world and the future prospects. Topics include petroleum, natural gas, coal, nuclear, hydroelectric, geothermal, solar, wind, biomass, and ocean energy. Global production, distribution, usage, and impacts of these resources will be discussed. Instructor(s): J. Burgess
Area: Natural Sciences.

AS.270.306. Urban Ecology. 3.0 Credits.
Urban ecology has been called the ecology in, of, and for cities. In this course, we will explore how ecological concepts are applied to urban ecosystems and the different approaches to urban ecological research. Topics will include: Biodiversity, water dynamics, energy and heat island effects, and nutrient cycling, urban metabolism, design of greenspace, and sustainability of cities. We will use Baltimore as a case study for studying cities. Prerequisites: AS.270.308 OR EN.570.205 OR EN.570.403
Instructor(s): M. Avolio
Area: Natural Sciences.

AS.270.307. Geoscience Modeling. 4.0 Credits.
An introduction to modern ways to interpret observations in the context of a conceptual model. Topics include model building, hypothesis testing, and inverse methods. Practical examples from geophysics, engineering, and medical physics will be featured. Instructor(s): T. Haine
Area: Natural Sciences.

AS.270.308. Population/Community Ecology. 3.0 Credits.
This course explores the distribution and abundance of organisms and their interactions. Topics include dynamics and regulation of populations, population interactions (competition, predation, mutualism, parasitism, herbivory), biodiversity, organization of equilibrium and non-equilibrium communities, energy flow, and nutrient cycles in ecosystems. Field trip included. Permission of instructor. Instructor(s): K. Szlavecz
Area: Natural Sciences.

AS.270.310. Evolution and Development of the Vertebrates. 3.0 Credits.
Modern vertebrates (animals with backbones) are the products of a more than 500-million-year evolutionary history. This course surveys that history and uses it to explore such core evolutionary concepts as adaptive radiation, convergence, extinction, homology, phylogenetic taxonomy, and tree thinking. Emphasis will be placed on the origins of the modern vertebrate fauna and how fossils are being integrated with developmental biology to better understand major transitions in the vertebrate body plan. Instructor(s): G. Bever
Area: Natural Sciences.

AS.270.311. Geobiology. 3.0 Credits.
A survey of the interactions between geological and biological processes at and near the Earth’s surface, covering topics such as biogeochemistry and nutrient cycles, soil chemistry, biomarkers, archives of paleobiology, and the evolution of life, with an emphasis on terrestrial systems. Recommended Course Background: AS.270.220
Instructor(s): N. Levin
Area: Natural Sciences.

AS.270.312. Mammalian Evolution. 3.0 Credits.
An introduction to the evolutionary history and diversity of mammals, with emphasis on the first half of the Cenozoic - the beginning of the Age of Mammals. The course will focus primarily on the adaptive radiation of mammals (including our own order primates) that followed the extinction of the dinosaurs, exploring the origins and relationships of the major groups of mammals as well as the anatomical and ecological reasons for their success. Lectures will be supplemented with relevant fossils and recent specimens. Instructor(s): S. Cooke
Area: Natural Sciences.

AS.270.313. Isotope Geochemistry. 3.0 Credits.
Area: Natural Sciences.

AS.270.315. Natural Catastrophes. 3.0 Credits.
A survey of naturally occurring catastrophic phenomena, with emphasis on the underlying physical processes. Topics include hurricanes, tornadoes, lightning, earthquakes, tsunamis, landslides, and volcanic eruptions and climate change. Intended for students in science and engineering. Instructor(s): A. Charrier De Assis
Area: Natural Sciences.

AS.270.316. Planets. 3.0 Credits.
This course will serve as an introduction to planetary science at a more advanced level than AS.270.114. Topics covered will include formation of the solar system, planetary interiors, surfaces and atmospheres, solar system exploration, and extrasolar planets. Recommended Course Background: AS.270.220 and AS.270.224.
Instructor(s): S. Horst
Area: Natural Sciences.

AS.270.317. Conservation Biology. 3.0 Credits.
In this course, students examine the meaning and implications of biodiversity with a focus on disciplines associated with conservation biology, wildlife conservation and wildlife management, including taxonomy, genetics, small population biology, chemical and restoration ecology, and marine biology. This includes exploring how conservation biology differs from other natural sciences in theory and in application. Students learn the major threats to biodiversity and what natural and social science methods and alternatives are used to mitigate, stop, or reverse these threats. The course also includes the economic and cultural tradeoffs associated with each conservation measure at the global, national, regional, and local levels. One required field trip. Instructor(s): J. Burgess
Area: Natural Sciences.
AS.270.318. Remote Sensing of the Environment. 3.0 Credits.
This course is an introduction to the use of remote sensing technology to study Earth’s physical and biochemical processes. Topics covered include remote sensing of the atmosphere, land and oceans, as well as remote sensing as a tool for policy makers. Also offered as 270.618
Instructor(s): B. Zaitchik; K. Lewis
Area: Natural Sciences.

AS.270.319. Geochronology and High-Temperature Isotope Geochemistry. 3.0 Credits.
Introduction to radiocarbon geochronology and mantle stable and radioisotope geochemistry. Course covers: (1) methods for dating of rocks and geologic processes using long-half-life radioisotope systems, including the various isotope systems available and their applicability; (2) radioisotope techniques for investigation of the geochemical evolution of the crust and mantle; (3) isotope fractionation and utility of traditional and novel stable isotope geochemistry for interrogating high-temperature processes, and (4) thermochronology and methods for interrogating upper-crustal processes. Recommended course background: AS.270.220 and AS.270.221, or instructor permission.
Instructor(s): D. Viete.

AS.270.320. Seminar in Planetary Science. 1.0 Credit.
Major problems of current interest in planetary science are critically discussed in depth.
Instructor(s): S. Horst
Area: Natural Sciences.

AS.270.322. Ocean Biogeochemical Cycles. 3.0 Credits.
This course will examine the cycling of trace chemicals in the ocean, consider what we can learn from the distributions of these chemicals about the ocean circulation, and ocean ecosystems. Topics covered will include oceanic biological productivity, open water cycling of nutrients and oxygen, ocean acidification and sediment cycling.
Instructor(s): A. Gnanadesikan
Area: Natural Sciences.

AS.270.324. Climate variability with python. 1.0 Credit.
Seasonal-to-decadal climate variability is important for various fields from agriculture to reinsurance, and it is challenging dynamically as the fluctuations often include coupled ocean-atmosphere mechanisms. This summer course covers mechanism for seasonal-to-decadal climate variability, and we will use python to build simple models to understand them. Students will learn the basics of python, numerical integration, and climate modelling. The course is S/U but will require a student report on a chosen mechanism of climate variability.
Instructor(s): A. Nummelin
Area: Natural Sciences.

AS.270.325. Introductory Oceanography. 3.0 Credits.
This class is an introduction to a wide range of physical, chemical, and biological phenomena in the world’s oceans. Underlying basic principles are exposed wherever possible. Topics covered include: seawater, waves, tides, ocean circulation, chemical oceanography, biogeochemical ocean processes, and remote sensing of the oceans. Recommended Course Background: freshman Physics, Chemistry, Calculus through ordinary differential equations.
Instructor(s): A. Gnanadesikan
Area: Natural Sciences.

AS.270.326. Cosmochemistry. 4.0 Credits.
Students in this course will gain an understanding of the origin of various forms of matter in our Solar System and beyond, along with its evolution through geologic processes. Beginning with the concepts of nucleosynthesis and stellar evolution, this course will then cover the condensation of matter, meteoritics, and petrogenetic evolution of differentiated, rocky bodies (i.e. asteroids, the Moon, Mars). Evolution of matter in extra-Solar planetary systems (i.e. exoplanets) will also be broached. In lab we will examine thin sections of meteorites, lunar material, and terrestrial analogs - a field trip to the Smithsonian Meteorite Collection is planned. Graduate and advanced undergraduate-level students are encouraged, as are interdisciplinary students with an interest in planetary science.
Instructor(s): A. Beck; J. Wicks
Area: Natural Sciences, Social and Behavioral Sciences.

AS.270.328. Planetary Exploration: Techniques and Data Analysis. 3.0 Credits.
Have you ever wondered what it would be like if you could visit other planets and travel through the space? Students in this course will use state-of-the-art observational techniques in planetary exploration and actual spacecraft data from the Cassini mission to Saturn and the Mars Rover mission to solve problems in planetary science and design a space exploration mission. Important planetary properties, such as atmospheric composition and interior composition of a planet, will be studied using remote sensing and in situ data. Recent discoveries about exoplanets will be integrated into course activities. Recommended Course Background: One semester of Introductory Chemistry (AS.030.101).
Instructor(s): X. Yu
Area: Natural Sciences, Social and Behavioral Sciences.

AS.270.332. Soil Ecology. 3.0 Credits.
The course introduces basic aspects of cycles and flows in the soil ecosystem, and provides students with an overview of the higher groups of soil organisms. Laboratory and field surveying methods are also covered.
Instructor(s): K. Szlavecz
Area: Natural Sciences.

AS.270.336. Freshwater Systems. 3.0 Credits.
A study of streams, lakes, and groundwater with a focus on aspects of water quality, hydrology, geomorphology, and aquatic ecology that are relevant to human impacts on freshwater systems. US environmental policies and water resource management agencies will also be examined in the context of issues such as dams, cattle grazing, climate change, and water allocation.
Prerequisites: AS.270.103 OR AS.271.107 or permission of the instructor.
Instructor(s): R. Kelly
Area: Natural Sciences.

AS.270.337. Freshwater Systems Lab. 1.0 Credit.
A hands-on investigation of the water quality, hydrology, geomorphology, and aquatic ecology of streams and other freshwater bodies. Includes field trips to water-related facilities such as drinking water and wastewater treatment plants.
Instructor(s): R. Kelly
Area: Natural Sciences.
AS.270.350. Sedimentary Geology. 4.0 Credits.
Sedimentary rocks are the historical records of the Earth, documenting climate change, mass extinctions, and the evolution of life. This course will provide an introduction to sedimentary processes and sedimentary rocks. Focus is placed on linking physical observations to the ancient environments in which sedimentary rocks once formed. Fundamental tools for interpreting the sedimentary rock record, such as depositional models, geochronology, and chem stratigraphy will be reviewed. Two 1-day weekend field trips will occur over the course of the semester. There will also be weekly 1-hour labs. Lab and field trip times will be determined in the first week of class. Graduate and advanced undergraduate level. Recommended Course Background: AS.270.220 or instructor permission.
Instructor(s): K. Lewis; M. Gomes
Area: Natural Sciences.

AS.270.366. Spacecraft Instrumentation Project. 3.0 Credits.
Co-Listed with EN.530.366 Investigation into the content relevant to an ongoing spacecraft instrumentation project. An interdisciplinary team will enhance the skills and knowledge of science and engineering students. Topics include mission background, planetary science, sensor design, spacecraft systems, and mission planning, and sensor fabrication, calibration, integration, and testing, data analysis and interpretation, scientific/technical writing and publication.
Instructor(s): S. Horst
Area: Engineering, Natural Sciences.

AS.270.369. Geochem Earth/Environmental. 3.0 Credits.
An introduction to all aspects of Geochemistry: theoretical, experimental, and observational, including the application of geochemistry to issues such as the migration of toxic metals and nuclear waste.
Prerequisites: AS.270.220
Instructor(s): D. Sverjensky
Area: Natural Sciences.

AS.270.380. Seminar in Regional Field Geology. 3.0 Credits.
Introduction to the regional geology and geological history of the Appalachian system (from Alabama to Newfoundland). Key papers on regional bedrock geology and Mesoproterozoic through Phanerozoic tectonics are reviewed in weekly seminar classes. Two three-day field trips are made on weekends negotiated at the beginning of the semester. Fieldwork will be designed with student input to test ideas and models from the literature. Techniques in sedimentary, metamorphic, igneous and structural field geology are introduced and developed in the field. Recommended course background: AS.270.220 and AS.270.221, or instructor permission.
Instructor(s): D. Viete; E. Smith
Area: Natural Sciences, Social and Behavioral Sciences.

AS.270.385. Planetary Physics and Chemistry. 3.0 Credits.
The fundamental principles governing the dynamic processes within and around the planets are treated in some detail. Core equations are developed and used to analyze nebula condensation, planetary accretion, convection in mantles and atmospheres, radiative and conductive heat transport, seismic waves, hurricanes, volcanism, and meteorite impacts, among others. Emphasis is on fundamentals and problem solving.
Prerequisites: AS.030.101; AS.171.101-102 or 103-104 or 105-106.
Instructor(s): D. Strobel
Area: Natural Sciences.

AS.270.396. Special Topics in Planetary Exploration. 3.0 Credits.
A selection of planetary research topics investigated by Prof. Strobel spanning the past 45 years covering the progress that has been made and remaining problems that still need to be addressed. The majority of topics will involve the outer solar system and the science discoveries made by the Voyager, Cassini-Huygens, and New Horizons Missions as well as observations by Earth orbiting satellites – IUE, HUT, HST, FUSE.
Instructor(s): D. Strobel
Area: Natural Sciences.

AS.270.397. Planetary Geology. 3.0 Credits.
Topics covered include the outer solar system, the science discoveries made by the Voyager, Cassini-Huygens, and New Horizons Missions as well as observations by Earth orbiting satellites – IUE, HUT, HST, FUSE.
Instructor(s): D. Strobel
Area: Natural Sciences.

AS.270.398. The Carbon Cycle: Past, Present and Future. 3.0 Credits.
This course will explore how the carbon cycle shapes environmental conditions and influences other biogeochemical cycles through an investigation of the modern carbon cycle, major carbon cycle perturbations in the geological record, and projections of future global change. The majority of the class will be structured as a reading seminar, but students will also develop an understanding of how to use quantitative models to evaluate patterns of change associated with both modern and ancient carbon cycle perturbations with implications for predicting future environmental changes. Recommended Prerequisites: AS.270.103 or AS.270.220 or AS.270.224
Instructor(s): E. Smith; M. Gomes
Area: Natural Sciences, Quantitative and Mathematical Sciences.

AS.270.401. Metamorphic Geology. 3.0 Credits.
Introduction to metamorphic geology and the concepts on which it is built. Ideas and techniques that underpin metamorphic petrology are introduced in the context of the development and evolution of metamorphic geology as a discipline. Focus is on utility of metamorphic geology in understanding crustal processes and the nature of plate tectonics. One-day, weekend field trips to explore the Baltimore Gneiss Domes. Recommended course background: AS.270.220 and AS.270.221, or instructor permission.
Prerequisites: AS.270.220 AND AS.270.221
Instructor(s): D. Viete
Area: Natural Sciences.
AS.270.404. Planetary Interiors. 3.0 Credits.
This course investigates the physical processes occurring in planetary interiors. Topics include formation and differentiation of planetary bodies, planetary structure, thermal evolution, convection, and dynamo generation of magnetic fields. Standard remote sensing methods used to investigate planetary interiors and results from recent planetary satellite missions will also be discussed. Recommended: Knowledge of vector calculus, PDEs and introductory physics.
Instructor(s): S. Stanley
Area: Natural Sciences.

AS.270.405. Modeling the Hydrological Cycle. 3.0 Credits.
Survey of modeling techniques for hydrological monitoring, analysis and prediction, including applied exercises with commonly used models. Topics include the terrestrial water balance, rivers and floods, groundwater, atmospheric transport, and precipitation processes. Focus is on numerical methods applicable at the large watershed to global scale.
Instructor(s): A. Dezfuli; B. Zaitchik.

AS.270.410. Planetary Surface Processes. 3.0 Credits.
This course explores processes that influence the evolution of planetary surfaces, including impact cratering, tectonics, volcanism, weathering, and sediment transport. These processes manifest themselves as structural deformation of planetary crusts due to loading by volcanoes, formation of craters by asteroid impacts, modification of surfaces by flowing landslides, rivers and glaciers, and the accumulation and transport of sand in dune fields on various planets. Emphasis is on the relationship to similar Earth processes, and the integrated geologic histories of the terrestrial planets, satellites, and asteroids. The focus will be on developing a physical understanding of these processes to interpret the surface characteristics and evolution of planets, satellites, asteroids, and comets from both qualitative assessments and quantitative measurements obtained from spacecraft data. A key component of the class will be the interpretation of these observations from recent and current planetary missions to the Moon, Mars, and other terrestrial bodies. Recommended Course Background: A sound knowledge of Calculus and Introductory Physics, and some prior knowledge of Earth and/or Planetary Science.
Instructor(s): K. Lewis
Area: Natural Sciences.

AS.270.423. Planetary Atmospheres. 3.0 Credits.
Instructor(s): S. Horst
Area: Natural Sciences.

AS.270.425. Earth and Planetary Fluids. 3.0 Credits.
An introductory course on the properties, flow, and transport characteristics of fluids throughout the Earth and planets. Topics covered include: constitutive relationships, fluid rheology, hydrostatics, dimensional analysis, low Reynolds number flow, porous media, waves, stratified and rotating fluids, plus heat, mass, and tracer transport. Illustrative examples and problems are drawn from the atmosphere, ocean, crust, mantle, and core of the Earth and other Planets. Open to graduate and advanced undergraduate students. Recommended Course Background: Basic Physics, Calculus, and familiarity with ordinary differential equations.
Instructor(s): S. Stanley
Area: Natural Sciences.

AS.270.431. Tectonics Seminar. 3.0 Credits.
Introduction to plate tectonics and its "framework" role in understanding the Earth. Key papers will be discussed in a weekly seminar class. Focus will be on early works that helped establish the theory; in addition to recent breakthrough contributions that have led to modifications and improvements to the theory of plate tectonics.
Instructor(s): D. Viete.

AS.270.495. Senior Thesis. 3.0 Credits.
Preparation of a substantial thesis based upon independent student research, supervised by at least one faculty member in Earth and Planetary Sciences. Open to Sr. departmental majors only. Required for department honors.
Instructor(s): A. Gnanadesikan; T. Haine
Area: Natural Sciences
Writing Intensive.

AS.270.496. Senior Thesis. 4.0 Credits.
Preparation of a substantial thesis based upon independent student research, supervised by at least one faculty member in Earth and Planetary Sciences. Open to Sr. departmental majors only. Required for department honors.
Instructor(s): A. Gnanadesikan; B. Passey; T. Haine
Writing Intensive.

AS.270.501. Independent Study. 3.0 Credits.
An independent course of study may be pursued under the direction of an adviser on those topics not specifically listed in the form of regular courses.
Instructor(s): B. Marsh; B. Zaitchik; C. Parker; K. Szlavecz.

AS.270.503. Independent Research. 3.0 Credits.
Instructor(s): G. Ball; K. Lewis.

AS.270.504. Independent Research. 0.0 - 3.0 Credits.
Research under the direction of members of the Earth & Planetary Sciences Faculty.
Instructor(s): E. Smith; M. Gomes; S. Horst.

AS.270.595. Internship. 1.0 Credit.
Instructor(s): C. Parker; D. Sverjensky; D. Veblen; D. Waugh.

AS.270.599. Independent Study. 3.0 Credits.
Instructor(s): Staff.

AS.270.603. Geochemistry Seminar.
A variety of topics of current interest involving mineral-fluid interactions will be reviewed.
Instructor(s): D. Sverjensky.
AS.270.605. EPS Colloquium. A weekly seminar series in which graduate students present their latest research results and attend Departmental seminars. This course is required for all graduate students in the Department of Earth and Planetary Sciences. Instructor(s): S. Stanley.

AS.270.606. EPS Colloquium. A weekly seminar series in which graduate students present their latest research results and attend Departmental seminars. This course is required for all graduate students in the Department of Earth and Planetary Sciences. Instructor(s): T. Wright.

AS.270.611. Global Atmospheric Dynamics. This course will examine the fluid dynamics that determine large-scale atmospheric circulation and variability using Ian James’ “Introduction to Circulating Atmospheres.” Topics covered will include the dynamics of Hadley cells, mid-latitude jets, baroclinic instability, monsoon circulations, and low-frequency variability of the circulation. Instructor(s): A. Gnanadesikan.

AS.270.612. Scientific Survival Skills. Transitioning from graduate school to a postdoc to a “permanent” job in the natural sciences requires a set of essential skills that are not covered as a formal component of most Ph.D. programs. This seminar will be a weekly discussion of career issues relevant to new scientists. Topics will include elements of good presentations, conferences, scientific writing and peer-review, employment trends, job interviews, and grant proposals. The class will conclude with a mock grant proposal review panel, conducted by the students. This seminar is aimed at graduate and advanced undergraduate students in the natural sciences planning careers in academia or industry. Instructor(s): J. Roberts.

AS.270.615. Inversion Modeling & Data Assimilation. This graduate class will introduce modern inverse modeling and data assimilation techniques. These powerful methods are used in atmospheric science, oceanography, and geophysics and are growing more widespread. Topics will include: singular value decomposition, Green’s function inversions, Kalman filtering, and variational data assimilation. The class will include lectures on concepts and theory, and practical experience in the computer laboratory. Permission of Instructor Required Instructor(s): T. Haine.

AS.270.616. Remote Sensing of the Environment. Also offered as 270.318 Instructor(s): B. Zaitchik; K. Lewis Area: Natural Sciences.

AS.270.619. Regional Climate Analysis. This seminar style course will address advanced topics in regional climate, including dynamic mesoscale models, climate change downscaling, seasonal forecasts, and statistical methods. Students will review relevant literature and collaborate to address modeling and analysis challenges. Instructor(s): B. Zaitchik Area: Natural Sciences.

AS.270.620. Seminar in Geophysical Turbulence and Transport. Turbulence plays an important role in setting the structure of both atmospheres and oceans by transporting heat and momentum. It also plays a key role in mobilizing chemical species such as nutrients and aerosols that play key roles in the Earth System. This seminar will cover how we measure and model turbulence and its effects. For the Fall of 2015 the course will center around Planetary Boundary Layers, including topics such as scaling theories, large eddies in boundary layers and their simulation, and interactions with small-scale topographic features. Instructor(s): A. Gnanadesikan.

AS.270.624. Advanced Seminar on Remote Sensing. Discussion of the physical principles that underlie earth remote sensing. Topics to include radiative transfer in Earth’s atmosphere, operating principles of active and passive remote sensing systems, and advanced methods for image analysis. Instructor(s): B. Zaitchik.

AS.270.625. Ocean General Circulation. The aim of this course is to achieve conceptual understanding of the large scale low frequency ocean general circulation. The role of the ocean circulation in earth’s climate is emphasized throughout. Instructor(s): T. Haine.


AS.270.628. Field Seminar. Weekend field trip to explore regional geology. Students are required to prepare short presentations on field trip stops in advance of weekend trip. Attendance at organizational meetings is required. Open to E & PS graduate students and upper level E & PS undergraduate majors and minors. Two meetings to be scheduled prior to trip. Trip dates are 4/15-4/17/2016. Consult instructors for details. Instructor(s): D. Viete.

AS.270.629. Tracer Transport in Geophysical Flows. This course examines the transport of substances in geophysical flows. Topics covered include fundamental transport processes, transport in simple flows, and use of chemical tracers to infer transport properties. These concepts will be illustrated by case studies in a variety of geophysical flows, including the flow in atmospheres, oceans, lakes, and groundwater. Instructor(s): D. Waugh.

AS.270.630. Physics and Chemistry of Aerosols. This course will cover fundamentals of aerosol physics and chemistry. Topics covered will include aerodynamics and diffusion of aerosol particles, condensation and evaporation, particle size distributions, optics of small particles, characterization of particle composition, and the diversity of aerosols found in planetary atmospheres. Recommended Course Background: Basic Physics and Chemistry. Calculus. Instructor(s): S. Horst.

AS.270.631. Tectonics Seminar. Introduction to plate tectonics and its “framework” role in understanding the Earth. Kay papers will be discussed in a weekly seminar class. Focus will be on early works that helped establish the theory, in addition to recent breakthrough contributions that have led to modifications and improvements to the theory of plate tectonics. Instructor(s): D. Viete Area: Natural Sciences.
AS.270.633. Advanced Topics in Isotopic Geochemistry.
Consent of instructor required in depth exploration of selected systems in stable isotope geochemistry, and examination of the physical basis of stable isotope fractionation. Topics vary annually.
Instructor(s): N. Levin
Area: Natural Sciences.

AS.270.641. Present and Future Climate.
Meets with AS.270.378.
Prerequisites: Student may not receive credit for both AS.270.378 and AS.270.641.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

AS.270.642. Surface Geochemistry.
Instructor(s): D. Sverjensky.

AS.270.643. Environmental Physics.
This course is an advanced-level review of the ways in which climate varies on time scales of seasons to decades, including El Nino, the Pacific Decadal Oscillation, the Indian Ocean Dipole Mode, the North Atlantic Oscillation and others. Topics covered will include, depending on class’s interest: 1) Methods for isolating climate modes. (2) Key dynamic and thermodynamic processes involved in causing such fluctuations, including atmospheric and oceanic wave propagation, airsea interaction and changes in the thermohaline circulation. (3) Impacts of climate modes on biogeochemical cycling, including some that are used by paleoclimatologists to reconstruct past variability. Geophysical understanding and links to fundamental mechanisms are emphasized.
Format will consist of a mix of lectures and paper discussions.
Instructor(s): A. Gnanadesikan
Area: Natural Sciences.

AS.270.645. Geobiology Seminar.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

AS.270.646. Earth’s Interior.
Instructor(s): D. Sverjensky.

AS.270.647. Physics of Climate Variability.
Instructor(s): D. Sverjensky.

AS.270.648. Geobiology Seminar.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

AS.270.649. Physics of Climate Variability.
Prerequisites: Student may not receive credit for both AS.270.378 and AS.270.641.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

AS.270.650. Special Topics in Planetary Exploration.
Instructor(s): B. Zaitchik.
Area: Natural Sciences.

AS.270.652. Surface Geochemistry.
Instructor(s): D. Sverjensky.

AS.270.653. Earth and Planetary Fluids II.
Instructor(s): D. Sverjensky.

AS.270.654. Environmental Data Analysis.
Instructor(s): D. Waugh; T. Haine.

AS.270.655. Environmental Data Analysis.
Instructor(s): D. Waugh; T. Haine.

Instructor(s): N. Izenberg.

Instructor(s): K. Szlavecz
Area: Natural Sciences.

Instructor(s): N. Izenberg
Area: Natural Sciences.

Instructor(s): N. Izenberg.

AS.270.663. Advanced Topics in Isotopic Geochemistry.
Instructor(s): A. Gnanadesikan
Area: Natural Sciences.

AS.270.664. Physics of Climate Variability.
Instructor(s): D. Sverjensky.

AS.270.665. Physics of Climate Variability.
Instructor(s): D. Sverjensky.

Instructor(s): N. Izenberg.

Instructor(s): K. Szlavecz
Area: Natural Sciences.

AS.270.668. Geobiology Seminar.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

AS.270.669. Special Topics in Planetary Exploration.
Instructor(s): B. Zaitchik.
Area: Natural Sciences.

AS.270.670. Atmospheric Science.
Instructor(s): E. Smith; M. Gomes
Area: Natural Sciences.

AS.270.671. Special Topics in Planetary Exploration.
Instructor(s): B. Zaitchik.
Area: Natural Sciences.

AS.270.672. Atmospheric Science.
Instructor(s): E. Smith; M. Gomes
Area: Natural Sciences.

AS.270.673. Environmental Physics.
Instructor(s): D. Sverjensky.

AS.270.674. Environmental Physics.
Instructor(s): D. Sverjensky.

AS.270.675. Environmental Physics.
Instructor(s): D. Sverjensky.

AS.270.676. Environmental Physics.
Instructor(s): D. Sverjensky.

AS.270.677. Environmental Physics.
Instructor(s): D. Sverjensky.

AS.270.678. Environmental Physics.
Instructor(s): D. Sverjensky.

AS.270.679. Environmental Physics.
Instructor(s): D. Sverjensky.

AS.270.680. Seminar in Regional Field Geology.
Introduction to the regional geology and geological history of the Appalachian system (from Alabama to Newfoundland). Key papers on regional bedrock geology and Mesoproterozoic through Phanerozoic tectonics are reviewed in weekly seminar classes. Two three-day field trips are made on weekends negotiated at the beginning of the semester. Fieldwork will be designed with student input to test ideas and models from the literature. Techniques in sedimentary, metamorphic, igneous and structural field geology are introduced and developed in the field.
Recommended course background: AS.270.220 and AS.270.221, or instructor permission.
Instructor(s): D. Viete; E. Smith
Area: Natural Sciences.

AS.270.696. Special Topics in Planetary Exploration.
Instructor(s): B. Zaitchik.
Area: Natural Sciences.

AS.270.807. Research.
Instructor(s): Staff.

AS.270.808. Research.
Instructor(s): Staff.

AS.271.107. Introduction to Sustainability. 3.0 Credits.
Humans are having such a massive impact on Earth systems that some call this the Anthropocene epoch. Should we consider this state of affairs progress or catastrophe? How to we find a sustainable path to the future? This course provides an interdisciplinary introduction to the principles and practice of sustainability, exploring such issues as population, pollution, energy and natural resources, biodiversity, food, justice, and climate change through the lens of systems thinking. Course open to freshmen, sophomores, and juniors. Seniors by instructor permission only.
Instructor(s): R. Kelly.
AS.271.120. Environmental Photojournalism. 3.0 Credits.
Environmental cognition, consciousness and communication are produced, reproduced, interpreted and remembered with the support of visual representations and, in particular, photography. Images increasingly structure our experience of nature, environmental problems, human-environmental relations, and ecological awareness. Students will review critical literature focusing on visual representation theory, the relationship between images and social change, and the history and typology of environmental photography. An understanding of modern environmental history, environmental issues and sustainability is required. Students will identify and investigate environmental issues facing Baltimore, participate in photographic critiques, and develop a final documentary project focusing on a specific environmental narrative. The class is designed with an emphasis on independent research and practice, interdisciplinary analysis, and application.
Instructor(s): A. Monopolis
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.271.301. Climate Change Adaptation in the Developing World. 3.0 Credits.
This course considers the way in which people and their livelihoods are adapting to climate change in sensitive regions of the developing world. The course will include an overview of climate systems and climate change science, although it will emphasize vulnerability assessment from an ecosystem and livelihood perspective. Using a case-study approach, the focus will be on key economic sectors of agriculture, water resources, forest systems and tourism. A focus of the course is how to develop an informed approach to climate change adaptation that can drive both national policy and international development and donor efforts to create sustainable responses that serve both the local country and global needs. Students will consider adaptive capacity in specific countries, evaluating the feasibility and sustainability of current adaptation strategies, differentiate national and international efforts and effects of adaptation; learn key tools for climate change assessment, review and critique climate data sources for developing countries, and compare climate change adaptation to the developed world. GECS Majors Only. Prerequisites: Intro to Sustainability, Intro to Global Environmental Change, or Climate Change: Science and Policy.
Prerequisites: AS.270.107 OR AS.271.107
Instructor(s): A. Monopolis, C. Parker
Area: Social and Behavioral Sciences.

AS.271.302. Exploring Nature. 3.0 Credits.
This course integrates environmental media analysis and production with weekly outdoor excursions. Environmental media increasingly structures our experience of nature, environmental problems, human-environmental relations, and ecological awareness. Students will survey a range of authors, photographers and filmmakers that have written about or documented nature and environmental issues. Field trips to Baltimore’s parks and green spaces will encourage students to discover their own sense of place and environmental worldview through careful exploration, observation and reflection. Using a mixed media journal, students will reflect on their experiences, perspectives, and insights. A background in photography or film is not required.
Instructor(s): A. Monopolis
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.271.304. Sustainable Food Systems. 3.0 Credits.
Where does your food come from? What impact does food production have on the environment and human societies? How can food systems become more sustainable as the human population increases? This seminar-style course examines the past, present, and future of agriculture, including topics such as the foodways of indigenous people, modern “factory farming” versus organic agriculture, genetically modified foods, and the interplay among science, economics, policy, and agriculture. Involves hands-on experiences.
Instructor(s): R. Kelly
Area: Social and Behavioral Sciences.

AS.271.305. Special Topics in Environmental Studies. 3.0 Credits.
Environmental Policy in the Age of Trump. This course will analyze the effects of the current administration’s actions on environmental issues by assessing the policies in question and estimating the potential impacts on climate change, human health, and ecology. Policies that have been overturned or are under review represent a number of environmental issues, including climate change and greenhouse gas emissions, offshore drilling, national monuments, mining pollution, toxic discharge into public waterways, the development of oil pipelines, public land use planning, coal leases, a harmful insecticide, hunting in wildlife refuges, airborne mercury emissions, protection of tributaries and wetlands under the Clean Water Act, energy and fuel-efficiency standards, and resource extraction from federal lands. Students will examine the historical roles environmental organizations and government agencies have played in advocating for, creating and enforcing U.S. environmental policy and will discuss the future roles of these actors and other stakeholders in implementing effective environmental policy.
Instructor(s): A. Monopolis
Area: Social and Behavioral Sciences.

AS.271.309. Designing Sustainable Wellness. 3.0 Credits.
This course examines the convergence of social and environmental sustainability within the built environment. The built environment refers to the space, structures and systems humans generate for living, working and playing. This includes everything from homes and office buildings, to neighborhoods and cities, to green spaces and parks. It also includes hard infrastructure, such as energy, transportation and water systems, and soft infrastructure, such as formal human services (e.g. health, education, recreation). More recently, the term has expanded to include conditions related to public health, such as walkability, bikability, and access to healthy foods. This course will examine the conceptual frameworks that support the creation of built environments, assess their impact on environmental and social well-being, and re-imagine methodologies and designs that may better promote “sustainable wellness” or, socio-ecological sustainability, in the future. Through case studies and a final design-based project, students will learn and apply the fundamental principles behind socio-ecologically sustainable design. The course is designed with an emphasis on interdisciplinary analysis and systems thinking. The course is geared towards GECS majors, in addition to students interested in psychology, design, architecture and urban planning.
Instructor(s): A. Monopolis
Area: Engineering, Social and Behavioral Sciences.
AS.271.360. Climate Change: Science & Policy. 3.0 Credits.
Prereq: 270.103 or permission of instructor. This course will investigate the policy and scientific debate over global warming. It will review the current state of scientific knowledge about climate change, examine the potential impacts and implications of climate change, explore our options for responding to climate change, and discuss the present political debate over global warming.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

AS.271.401. Environmental Ethics. 3.0 Credits.
Environmental Ethics is a philosophical discipline that examines the moral relationship between humans and the natural environment. For individuals and societies, it can help structure our experience of nature, environmental problems, human-environmental relations, and ecological awareness. Beginning with a comprehensive analysis of their own values, students will explore complex ethical questions, philosophical paradigms and real-life case studies through readings, films and seminar discussions. Traditional ethical theories, including consequentialism, deontology, and virtue ethics will be examined and applied. Environmental moral worldviews, ranging from anthropocentric to ecocentric perspectives, will be critically evaluated. Organized debates will help students strengthen their ability to deconstruct and assess ethical arguments and to communicate viewpoints rooted in ethical principles. Students will apply ethical reasoning skills to an examination of contemporary environmental issues including, among others, biodiversity conservation, environmental justice, climate change, and overpopulation. Students will also develop, defend and apply their own personal environmental ethical framework. A basic understanding of modern environmental history and contemporary environmental issues is required. Prior experience with philosophy and ethics is not required.
Instructor(s): A. Monopolis
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.271.402. Water, Energy, and Food. 3.0 Credits.
The water, energy and food (WEF) nexus is a topic of growing interest in the research and policy communities. This course will survey WEF concepts and principles, introduce tools of analysis, and engage students in case studies of critical WEF issues in the United States and internationally.
Instructor(s): B. Zaitchik.

AS.271.403. Environmental Policymaking and Policy Analysis. 3.0 Credits.
This course provides students with a broad introduction to US environmental policymaking and policy analysis. Included are a historical perspective as well as an analysis of future policymaking strategies. Students examine the political and legal framework, become familiar with precedent-setting statutes such as NEPA, RCRA, and the Clean Air and Clean Water Acts, and study models for environmental policy analysis. Cost benefit studies, the limits of science in policymaking, and the impact of environmental policies on society are important aspects of this course. A comparison of national and international policymaking is designed to provide students with the proper perspective. This course is taught in conjunction with an identical graduate course. All students will be expected to perform at a graduate level.
Instructor(s): J. Maldonado
Area: Social and Behavioral Sciences.

AS.271.404. GIS Workshop. 1.0 Credit.
An accompaniment to the GECS Senior Capstone Seminar for students whose research project involves a GIS component. Designed to enable beginner to advanced GIS users to acquire the data and skills needed to accomplish their research goals.
Corequisites: AS.271.506
Instructor(s): R. Kelly
Area: Natural Sciences.

AS.271.501. Independent Study. 3.0 Credits.
Instructor(s): A. Monopolis.

AS.271.502. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): A. Monopolis; S. Horst.

AS.271.505. Senior Capstone Experience. 4.0 Credits.
This seminar will provide the academic space, time, and mentoring for students to integrate, synthesize and apply the knowledge and skills obtained through GECS curriculum into a tangible environmental filed project.
Instructor(s): A. Monopolis
Writing Intensive.

AS.271.506. GECS Senior Capstone Seminar Part I. 3.0 Credits.
The GECS Senior Capstone Seminar will provide the intellectual time and space to bring together the knowledge and tools acquired during the four years of interdisciplinary work on the GECS curriculum into a coherent framework in preparation for careers, and/or graduate work. Part I of this module will include the initial, research and planning phase of the capstone project. Part II, during the Spring semester, will involve the application and implementation phase.
Instructor(s): A. Monopolis.

AS.271.507. Internship. 1.0 Credit.
Instructor(s): R. Kelly.

AS.271.508. Internship. 1.0 - 3.0 Credits.
Instructor(s): C. Parker; R. Kelly.

AS.271.509. Applied Experience. 1.0 Credit.
This course is designed to accompany a supervised, hands-on experience working on an environmental or sustainability-related research project or internship. While completing 80 hours of applied work, students will prepare a reflective journal, paper, and poster presentation about their experience. Graded S/U only.
Instructor(s): R. Kelly
Area: Natural Sciences.

Cross Listed Courses
Near Eastern Studies
AS.130.378. Geoarchaeology: Applications of Earth Science to Archaeology. 3.0 Credits.
Geoarchaeology is a multidisciplinary subfield that applies the tools and techniques of earth science to understand ancient humans and their interactions with environments. This course examines basic topics and concepts, including archaeological site formation, paleo-environmental reconstruction, raw materials and resources, soil science, deposition and erosion of wind and water-borne sediments in different environments such as along rivers, lakes and coastlines, radiocarbon and other chronometric dating methods, and ground-based remote sensing, including ground penetrating radar.
Instructor(s): M. Harrower
Area: Natural Sciences, Social and Behavioral Sciences.
AS.131.678. Geoarchaeology: Applications of Earth Science to Archaeology. Geoarchaeology is a multidisciplinary subfield that applies the tools and techniques of earth science to understand ancient humans and their interactions with environments. This course examines basic topics and concepts, including archaeological site formation, paleoenvironmental reconstruction, raw materials and resources, soil science, deposition and erosion of wind and water-borne sediments in different environments such as along rivers, lakes and coastlines, radiocarbon and other chronometric dating methods, and ground-based remote sensing, including ground penetrating radar. Instructor(s): M. Harrower Area: Natural Sciences, Social and Behavioral Sciences.

East Asian Studies

http://krieger.jhu.edu/east-asian/

The East Asian Studies major is interdisciplinary and interdepartmental. Its primary purpose is to introduce undergraduates to the knowledge, language skills, and research methods they will need to enter various academic and professional paths relating to China, Japan, and Korea. Majors in East Asian Studies engage in intensive Chinese, Japanese and/or Korean language study through the Center for Language Education and work with faculty on such topics as China in the global economy, nationalism in East Asia, Korean identity and culture, modern Japanese history and politics, Chinese urban history, and women in East Asia. Students are encouraged to pursue original research projects in East Asia with the support of intersession and summer travel grants, stipends for conference presentations, a senior thesis honors option, and seminars that bring together research scholars, faculty, graduate students and undergraduates in a manner that is distinctly Hopkins. Alumni of the program are making their mark around the world in business and finance, academia, law, international development, medicine and public health, engineering, media, public service, and the arts.

Hopkins in Tokyo

In fall 2012, a full-year undergraduate exchange program began with the University of Tokyo, and it is off to a great start. This new study abroad program was designed with Hopkins’ East Asian Studies majors and Japanese language students in mind. As with other departmental study abroad programs at Hopkins, students’ credits and grades will be transferred between the two universities.

This is a direct exchange program between our universities, rather than a program run by Hopkins. For each Hopkins student who attends the University of Tokyo, one University of Tokyo student will attend Hopkins. Each Hopkins student has a Japanese student as his/her personal tutor. The tutors assist students in both academic matters and in daily life.

Limited to 1-3 students per year, admission to the University of Tokyo program is competitive. Students must have completed 4 semesters of college-level Japanese or the equivalent, have a term GPA of 3.0 or above, and submit two faculty references, one of which should be from a Japanese language instructor. For more information and application instructions, visit krieger.jhu.edu/east-asian/study-abroad/hopkins-in-tokyo/

Hopkins Waseda University: Global Leadership Program

The aim of the Global Leadership Program (GLP) is to identify students of promise in multiple fields of study and promote their development as leaders in a world of ever-changing demands and opportunities. 10-15 Fellows from top-ranked U.S. universities will join another 10-15 Waseda Fellows in this U.S.-Japan "Zemi", a unique Japanese-style collaborative seminar and small-group pedagogical method. Students will take classes and conduct joint research projects. This program is for the academic year and does not require prior knowledge of Japanese language. Admission to the program is limited to two JHU students per year and is competitive. For more information and application instructions, visit http://krieger.jhu.edu/east-asian/study-abroad/waseda-university-exchange-program/.

Requirements for the B.A. Degree

(See also Requirements of a Bachelor’s Degree (p. 7.)

The curriculum of the East Asian Studies major consists of a balanced mixture of language and area studies.

Students select from among three discipline-based focus areas - history, political science, or sociology - or create an individualized focus area. In addition to solid language training and content courses about the region, EAS majors receive training in the methods and theory of the particular academic discipline they select as a focus area. If they choose, East Asian Studies majors may double major in International Studies, as the requirements of each of the three focus areas overlap with those of International Studies. The individualized focus area requires consultation and approval of the director of undergraduate studies.

Requirements for the B.A. Degree

One East Asian Survey Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.100.243</td>
<td>China: Neolithic to Song</td>
<td>3</td>
</tr>
<tr>
<td>or AS.100.347</td>
<td>Early Modern China</td>
<td>3</td>
</tr>
<tr>
<td>or AS.100.348</td>
<td>20th-Century China</td>
<td>3</td>
</tr>
</tbody>
</table>

Three Additional East Asian Studies Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two East Asian Studies courses at any level</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>One East Asian Studies course at the 300- or 400-level</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

East Asian Foreign Language

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four courses in an East Asian Language at any level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two courses in an East Asian Language at the third-year level or higher **</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

One Focus Area - History, Political Science, Sociology, or History of Science and Technology

History focus area

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.100.193</td>
<td>Undergraduate Seminar In History</td>
<td>3</td>
</tr>
<tr>
<td>AS.100.194</td>
<td>Undergraduate Seminar in History</td>
<td>3</td>
</tr>
</tbody>
</table>

One East Asian history course at any level

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>One East Asian history course at the 300- or 400-level</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Political Science focus area

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two core courses at the 100- or 200-level; in two of the following subfields - American Politics, Comparative Politics, International Relations, or Political Theory.</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>One East Asian political science or sociology courses at any level</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>One East Asian political science or sociology course at the 300- or 400-level</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Sociology focus area

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>One East Asian sociology or political science course at any level</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>One East Asian sociology or political science course at the 300- or 400-level</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Select two of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.230.101</td>
<td>Introduction to Sociology</td>
<td>3-4</td>
</tr>
</tbody>
</table>
or AS.230.202 Research Methods for the Social Sciences
or AS.230.205 Introduction to Social Statistics
or AS.230.213 Social Theory

History of Science and Technology focus area

Two survey courses from the following list:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.140.105 History of Medicine</td>
<td>3</td>
</tr>
<tr>
<td>or AS.140.106 History of Modern Medicine</td>
<td></td>
</tr>
<tr>
<td>or AS.140.301 History of Science: Antiquity To Renaissance</td>
<td></td>
</tr>
<tr>
<td>or AS.140.302 Rise Of Modern Science</td>
<td></td>
</tr>
<tr>
<td>or AS.140.321 Scientific Revolution</td>
<td></td>
</tr>
</tbody>
</table>

Two upper level East Asian courses from the following list:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.140.305 From the Compass to Androids: History of Science, Technology, and Medicine in Asia</td>
<td>3</td>
</tr>
<tr>
<td>or AS.140.398 Godzilla and Fukushima: Japanese Environment in History and Films</td>
<td></td>
</tr>
<tr>
<td>or AS.140.346 History of Chinese Medicine</td>
<td></td>
</tr>
<tr>
<td>or AS.140.146 History of Public Health in East Asia</td>
<td></td>
</tr>
</tbody>
</table>

Courses taught by professors Yulia Frumer, Marta Hanson, and Yumi Kim may be applicable even if not coded AS.140, pending permission.

Individualized focus

Requires approval of the EAS director. Focus requirements to be determined in consultation with the director.

* Or students may take another East Asian survey course as approved by the director of undergraduate studies from the History or History of Science & Technology Departments.

** Students entering with advanced proficiency in an Asian language (as determined by the Center for Language Education) will not be permitted to waive language study and are expected to complete at least two years of language study in a second Asian language in order to fulfill the requirements of the major. Students who place into 3rd year Japanese or Korean on their initial placement test can and should continue their study of the same language for 3rd and 4th year. In the absence of formal language courses at the fifth-year level at Homewood, we will in such cases allow students to replace the remaining two language classes with other electives—permit them to transfer credits from a 5th-year language course taken elsewhere or overseas. Students entering at third year Chinese should continue their language study through the fifth-year level and will not be permitted to substitute electives, since we offer advanced classes in Chinese. Students studying abroad can formally substitute comparable language classes for language study at Johns Hopkins if they receive credit for their overseas program.

Sample Plan of Study

The plan below assumes the student begins language study in Chinese at JHU.

Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.373.115 First Year Chinese</td>
<td>4.5</td>
<td>AS.373.116 First Year Chinese II</td>
<td>4.5</td>
</tr>
<tr>
<td>East Asian Studies course at any level</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.5</td>
<td></td>
<td>4.5</td>
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</table>

Sophomore

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.373.215 Second Year Chinese</td>
<td>4.5</td>
<td>AS.373.216 Second Year Chinese II</td>
<td>4.5</td>
</tr>
<tr>
<td>Focus area requirement</td>
<td>3</td>
<td>Required survey course</td>
<td>3</td>
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<tr>
<td>Focus area requirement</td>
<td>7.5</td>
<td></td>
<td>10.5</td>
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</table>

Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.373.315 Third Year Chinese</td>
<td>3.5</td>
<td>AS.373.316 Third Year Chinese II</td>
<td>3.5</td>
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<tr>
<td>Focus area requirement</td>
<td>3</td>
<td>East Asian Studies course at 300-400 level</td>
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<tr>
<td>Focus area requirement</td>
<td>6.5</td>
<td></td>
<td>6.5</td>
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Senior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asian Studies course at any level</td>
<td>3</td>
<td>Focus area requirement</td>
<td>3</td>
</tr>
<tr>
<td>Additional language study (optional)</td>
<td>3</td>
<td>Additional language study (optional)</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 49

Honors

- Honors in the major may be earned by maintaining a GPA of 3.7 in the major and writing a senior honors thesis by taking a two-semester seminar, AS.310.431 Senior Thesis Seminar: East Asian Studies and AS.310.432 Senior Thesis Seminar: East Asian Studies. The thesis seminar is a total of six credits and may count toward two of the required EAS courses.

Other Departmental Requirements

No major requirements may be taken satisfactory/unsatisfactory. All courses required for the major must be passed with a grade of C- or higher. The University encourages students enrolled in this program to take advantage of foreign study options. Courses and programs must be pre-approved by the student’s East Asian Studies advisor.

Transfer credit policy: Up to six classes may be transferred from study abroad programs or other schools upon approval of the major advisor.

For current faculty and contact information go to http://krieger.jhu.edu/east-asian/directory/

Faculty

Director

Tobie Meyer-Fong
(History)

Professors

Lingxin Hao
(Sociology)

William T. Rowe
(History)

Kellee S. Tsai
(Political Science)
Courses

AS.310.106. Introduction to Korean History and Culture. 3.0 Credits.
This course offers a comprehensive overview of Korean history and culture from ancient times to the modern era. Through primary, secondary, and audio-visual sources, students will become familiar not only with the overall contours of the entirety of Korean history, but also with its cultural and religious legacy. The course combines lectures and class discussions.
Instructor(s): Staff
Area: Humanities.

AS.310.108. Introduction to Chinese Fiction and Drama. 3.0 Credits.
This course will introduce Chinese fiction and drama from the Tang dynasty (618-906) to the early Republican period (1911-1949), such as the romantic dramas of Tang Xianzu and the uncanny tales of Pu Songling. Students will draw connection between these vibrant literary genres and the cultural and socio-historical events that shaped imperial China. Key topics include story-telling, romance, urban culture, gender, reincarnation, and many more. Students will acquire skills in how to read, analyze and discuss the rich legacy of Chinese fiction and drama in translation and to think critically about these writings. Reading materials are all in English.
Instructor(s): F. Joo
Area: Humanities.

AS.310.114. Introduction to East Asian Religions. 3.0 Credits.
This survey course explores the ideas and practices of various East Asian religious traditions. It covers not only major religious teachings – Confucianism, Buddhism, Daoism, and Shinto – but also touches upon other folkloric traditions, such as shamanism, in order to understand the rich diversity of East Asian religions. Using a variety of methodologies such as art history, literature, history, and anthropology and materials such as paintings, tales, and historical documents, students will be introduced to the doctrines and practices of major religious traditions, as well as themes relating to family, gender, the nation state building, and imperialism.
Instructor(s): F. Joo
Area: Humanities.

AS.310.115. Ghost Tales from China and Japan, 14th-19th Centuries. 3.0 Credits.
We cannot express our own experience of death – only imagine life after death. How did people in the past conceptualize the world of the dead? Ghost tales will teach us what we imagine as the experience of dead and life after death. This course aims to introduce students to a variety of ghost stories in Late Imperial China and Tokugawa Japan and connect their literary imagination of the dead to the cultural, socio-historical, and religious context of each society as well as to the broad East Asian tradition of supernatural narratives. While we also touch upon earlier traditions on narrating the dead, most of the stories in class readings are from the Ming (1368-1644) and Qing (1644-1911) dynasties of China, and the Tokugawa period (1600-1868) of Japan. Key issues include family, gender, sexuality, body, medicine and many more. Although we will also take a look at visual and theatrical representations of the dead, we will primarily focus on literary texts about ghostly phenomena. Film screenings required. All readings are in English.
Instructor(s): F. Joo
Area: Humanities.
**AS.310.117. Love and Illusion in Japanese Literature. 3.0 Credits.**

This course aims to introduce students to a variety of literary texts featuring love and illusion from the 12th to the 21st century Japan. We will explore how enchantment and disenchantment play in the literary imagination of romantic love within Japanese literary history. The target texts cover a wide range of literary products from medieval noh drama to the modern novelist Izumi Kyoka's gothic tales and further to a contemporary Murakami Haruki's novella. By reading a variety of narrative forms such as diary literature, drama, epic, poetry, and modern fiction, we will examine changing ideas about marriage, love, sexuality, religion, and modernity within the literary discourse.

Instructor(s): F. Joo
Area: Humanities.

**AS.310.118. Japanese Popular Culture. 3.0 Credits.**

This course will examine Japanese popular culture as a way to discuss contemporary Japanese society. We will investigate a wide range of cultural products — from literature, anime and manga to theater, music, fashion and food — and question how these items are created, circulated, and consumed in Japanese society as well as by individuals. Since many Japanese cultural products also quickly move beyond the national borders in the age of globalization, we will also discuss the global consumption of Japanese popular culture. Topics include gender, sexuality, family, fan community, global capitalism, mass media, race and power. Film screenings and project groups are required. Reading materials are all in English.

Instructor(s): F. Joo
Area: Humanities.

**AS.310.200. Economic Growth and Development in East Asia. 3.0 Credits.**

The course offers an overview of the complexities of East Asia’s development experience from a variety of perspectives, and it is divided into three parts to allow students to develop expertise in one or more countries and/or policy areas, while also cultivating a broad grasp of the region and the distinct challenges of “East Asia fast-paced, sustained economic growth.” Part I considers the origins of Asian economic development, analyses the common economic variables behind the region’s success, looks at the East Asian financial crisis and its lessons and assesses whether or not East Asian countries have learned them. Part II will focus on the development experiences of individual countries, with an emphasis on the ASEAN economies, NIEs, Japan and China. Part III considers topics of special interest to Asia, including trends toward greater regional economic cooperation, both in the real and financial/monetary sectors, and issues related to poverty, migration, and inclusiveness.

Instructor(s): G. Dore
Area: Social and Behavioral Sciences.

**AS.310.201. Freshman Seminar: Korean History through Film and Literature. 3.0 Credits.**

In this course, students will engage with select topics in Korean history from premodern and modern times and examine how the past has been represented through various forms of film and literature. This will be combined with readings of academic articles to allow students to gauge the distance between scholarship and cultural expressions of history. Through this, students will be introduced to the highly contested and often polarizing nature of Korean history and the competition surrounding historical memory.

Instructor(s): Staff
Area: Humanities.

**AS.310.205. Music in East Asia. 3.0 Credits.**

This survey course focuses on music in modern East Asia. By exploring historical and ethnographic works by scholars in ethnomusicology, history, and anthropology, this course examines traditional, contemporary, and popular musical and theatrical genres. Through case studies, we will discuss major topics—including nationalism, modernity, ethnicity, gender, colonialism, and globalization—of modern East Asia, ranging from Japan, South Korea, North Korea, China, Taiwan, Hong Kong, to Asian diasporas. This course aims to enhance students’ cross-cultural understanding, interdisciplinary approach to performance, and critical thinking on the concepts of “East Asia” and “performance.”

Instructor(s): P. Tse
Area: Humanities.

**AS.310.206. Film and Performing Arts in China: 1949–present. 3.0 Credits.**

This course explores Chinese film, music, and theater in post-1949 China. Through discussing scholarly works in history, theater, ethnomusicology, and film studies, students will be exposed to interdisciplinary approach to engaging with film, traditional theater (xiqu), instrumental music, and popular music in China, Taiwan, Hong Kong, and Chinese diasporas. We will examine issues including nationalism, cultural hegemony, modernity, invented tradition, cultural policy, class, and gender. Supplemented by case studies, this course is organized around two overarching questions: how does film and performing arts inform us about the social history of China? How is expressive culture utilized in political agendas in the modern China.

Instructor(s): P. Tse
Area: Humanities.

**AS.310.301. Documentary Photography in a Changing China. 3.0 Credits.**

This course aims to inspire students to explore the impacts, meanings, and explanations of social transformation in contemporary China, via the lens of documentary photography. The photographic images of selective topics will include the products of photojournalism and documentary photography, and several documentary films, by both Chinese and non-Chinese photographers. While one picture is worth thousand words, one picture may also provoke countless interpretations. Students are strongly encouraged to read broadly about different aspects of social transformations in contemporary China, and to select and curate their own subjects of photo images. The spirit of comparative study of documentary photography of China and other parts of world will be strongly encouraged. Active class participation is imperative. A small exhibition on the campus will be organized by the Spring semester. The course is designed for upper division undergraduates. Cross-listed with Sociology and International Studies (CP).

Instructor(s): G. He
Area: Social and Behavioral Sciences.

**AS.310.302. Human Rights in China and U.S. Policy: Advocacy Opportunities and Challenges. 3.0 Credits.**

This interactive seminar will explore domestic human rights issues in China and U.S. policy toward China on human rights. In addition to learning about the broader landscape of human rights issues and related challenges in China, students will select a specific human rights issue to focus on during the course. As a practice-oriented seminar, students will develop advocacy skills that will enable them to effectively “make the case” for why the Administration and Congress should press China on the topic they’ve selected.

Instructor(s): A. Worden
Area: Social and Behavioral Sciences.
AS.310.305. Southeast Asia and US Security Strategy. 3.0 Credits.
This survey course is designed to introduce students to Southeast Asia – the ten member countries of the Association of Southeast Asian Nations (ASEAN) plus Australia and New Zealand. Southeast Asia is an integral part of the broader region of East Asia and a geographic bridge to the Indian subcontinent (South Asia). Southeast Asia has been one of the great success stories in the saga of modernization and development of post-colonial Afro-Asia over the last six decades. Its resulting economic importance is matched by its strategic significance given the presence of imbedded jihadist networks and the emergence of China as a regional great power and aspirant superpower. Nevertheless, the region has been largely overlooked by senior foreign policy and defense officials in Washington. This course will equip students to fill that void by examining the region from the perspective of national security strategy – broadly understood in its multiple dimensions. Students will be challenged to formulate some element of a viable U.S. national security strategy for the region.
Instructor(s): M. Ott
Area: Social and Behavioral Sciences.

AS.310.306. Domestic Politics of Contemporary China. 3.0 Credits.
This course introduces students to China's contemporary political history and current political system. It helps students develop a critical understanding of China's governance institutions and processes, political economy, and state-society relations. The course focuses primarily on China's domestic politics but also covers China's changing role in Asia and the world.
Instructor(s): Y. Yang
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.310.307. Governance and Politics in China. 3.0 Credits.
A dramatic rise of popular protests in China today has spurred lively discussions about the causes, dynamics, and impact of these protests. This course will provide students with an opportunity to understand these issues by discussing the social, institutional and cultural background of protests, major forms of protest, social groups involved, government responses, and social implications of various kinds of protests. The first part of the course will explore significant socio-economic changes since 1978 and the effects of these changes on China's social structure and stratification. This part will also examine changes in governance and political systems in the reform era and review important theories of contentious politics. The second part will examine protests by distinct social groups, including peasants, workers, homeowners, and ethnic minority groups, pro-democratic activists, among others. This part will identify similarities and differences in the demands and actions of different groups, introduce the major forms of popular resistance, and explore how the state deals with them accordingly. The course will conclude with discussion of the outcomes of social protests in China and make a cross-national comparison between protests in China and other authoritarian states. By taking China as an example, this course will enhance students' knowledge about forms of popular contention and government responses in an authoritarian regime as well as help students develop analytical and critical thinking skills with regard to contentious politics.
Instructor(s): Y. Li
Area: Social and Behavioral Sciences
Writing Intensive.

AS.310.308. The Frontier in Late Imperial China. 3.0 Credits.
The tremendous expansion of Chinese frontiers during the late imperial period forced the state and those who lived within it to grapple with complex problems of governance, ethnicity, and the geographic extent of "China". Issues and concerns associated with the massive Chinese frontiers have extended into the present; hence, no one can appreciate the current problems plaguing China's northwestern, southwestern, or coastal regions without an understanding of its historical antecedents. This seminar is designed to introduce major scholarly works and theoretical frameworks on the Chinese frontier.
Instructor(s): J. Bandy
Area: Humanities
Writing Intensive.

AS.310.309. Monsters, Demons, and Ghosts: Folklore and Festival in Japan. 3.0 Credits.
This course examines popular narratives and festivals from historical through contemporary Japan. Rather than traditional sources (canonical works, philosophical doctrines, and high art), it focuses on non-elite modes of expression: oral histories, epic tales, local legends, stories of the supernatural, music, religious festivals, manga, anime, and film. Through analyses of these mediums, students explore the underlying belief structures that have shaped ideas concerning death and the afterlife, moral ethics, and the spiritual realm in Japan. The course also tackles issues concerning the intellectual construct of the 'folk' and folk religion. Who are the folk? How does this concept relate to regional versus national identity, civilized versus so-called primitive populations, premodern versus modern categories? Students will engage these questions through active discussions in the classroom, in-class writing exercises, mini-presentations, and two papers.
Instructor(s): C. Carter
Area: Humanities
Writing Intensive.

AS.310.310. Shamans, She-Devils, and Pilgrims: Women & Gender in East Asian Religions. 3.0 Credits.
This course examines the complexities of gender and the role that women have played in the religions of China, Korea, and Japan. It explores two main types of content: 1) religious discourse on women and gender through doctrines, scriptures, narratives, myths, and legends; and 2) the practices, beliefs, and lives of real women through historical cases, including those of nuns, laity, sovereigns and family members. Organized in chronological order, the course begins with early sources across East Asia and finishes in contemporary times. Readings and assignments emphasize the analysis of primary sources, complemented by secondary works for historical and cultural context. Students will end the course with a research paper focused on a topic of their choice.
Instructor(s): C. Carter
Area: Humanities
Writing Intensive.
AS.310.312. Masterpieces of Chinese Literature: Song through 20th Century, a Literature-in-Translation class. 3.0 Credits.
In the millennium from the Song Dynasty (960-1280) to the modern era court poets and master storytellers, eccentric misfits and satiric novelists, as well as courtesans and film makers all considered a complex and changing China. We will look at the masterpieces of this millennium, examining both text and cultural context. In examining the texts we will rely on close reading in order to develop sound critical interpretations. We will also place the text in cultural context, considering the multiple forces--political, economic, artistic and religious--that shaped the lives of these writers and the cultures they observed.
Instructor(s): V. Cass
Area: Humanities
Writing Intensive.

AS.310.315. First Year Classical Chinese, First Semester. 3.0 Credits.
Readings in prose and poetic texts of the pre-Qin period. Class emphasizes language acquisition, especially grammar and vocabulary memorization. In addition we will read and discuss works in western languages that treat the culture and writers of the Ancient period. Biweekly quizzes included. A final translation project required. Recommended Course Background: 2 years mandarin or the equivalent.
Instructor(s): F. Joo
Area: Humanities.

AS.310.316. First Year Classical Chinese: Language and Literature of the Ancient Period. 3.0 Credits.
Readings in prose and poetic texts of the Zhou and Han Dynasties. Class emphasizes language acquisition, especially grammar and vocabulary memorization. In addition we will read and discuss works in western languages that treat the culture and writers of the Ancient period. Quizzes and Tests (Midterm and Final) will cover both language and cultural data. A short paper also required.
Instructor(s): V. Cass
Area: Humanities.

We will examine how major political events, players, norms and institutions have shaped US-Asia relations in the modern era. Cross-listed with Sociology and International Studies (CP).
Instructor(s): W. Konishi
Area: Social and Behavioral Sciences
Writing Intensive.

AS.310.401. Authoritarianism, Democracy, and Economic Development: Korea, Indonesia, and Myanmar. 3.0 Credits.
The East Asia’s “miracle growth” has not gone hand in hand with a decisive move toward democracy. This seminar explores the reasons why democratization proceeds slowly in East Asia, and seems to be essentially decoupled from the region’s fast-paced economic growth and development, and it is divided into three parts. Part I introduces the specifics of East Asia’s economic development strategies as well as key concepts of democracy, authoritarianism and military rule and the tensions between these theories and the East Asian experience. Part II will focus on the development experiences of Korea, Indonesia and Myanmar in light of what discussed in Part I of the seminar. The, Part III presents lessons emerging from the comparison of Korea’s, Indonesia’s and Myanmar’s developmental trajectories, and explore the role international organizations (e.g. ADB, EU, IMF, WB etc.) played in those choices.
Instructor(s): G. Dore
Area: Humanities.

AS.310.402. Labor Politics in China. 3.0 Credits.
This course explores the transformation of labor relations in China over the past century. It will cover the origins of the labor movement, the changes brought about by the 1949 Revolution, the industrial battles of the Cultural Revolution, the traumatic restructuring of state-owned enterprises over the past two decades, the rise of private enterprise and export-oriented industry, the conditions faced by migrant workers today, and recent developments in industrial relations and labor conflict. The course is designed for upper division undergraduates and graduate students. Cross-listed with Sociology and International Studies (CP).
Instructor(s): G. He; J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.310.431. Senior Thesis Seminar: East Asian Studies. 3.0 Credits.
Students may earn honors in the East Asian Studies major by maintaining a 3.7 average in the major and completing a senior thesis by taking the year-long AS.310.431 & AS.310.432 Senior Thesis Seminar: East Asian Studies. Students are required to secure the mentorship of an adviser among the EAS faculty before asking for permission to enroll in the course.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.310.432. Senior Thesis Seminar: East Asian Studies. 3.0 Credits.
This course is the continuation of Senior Thesis Course AS.360.431 for students completing their thesis in the East Asian Studies program.
Instructor(s): T. Meyer-Fong
Area: Social and Behavioral Sciences
Writing Intensive.

AS.310.501. Independent Study - East Asia. 1.0 - 3.0 Credits.
Students carry out an independent research project involving East Asia.
Instructor(s): W. Rowe.

AS.310.592. Summer Internship. 1.0 Credit.
Instructor(s): W. Rowe.

AS.310.600. Advanced Topics in East Asian Studies. 1.0 Credit.
This interdisciplinary seminar gives graduate students in East Asian Studies opportunities to present and receive comments on their dissertation chapters, prospectuses, conference papers, and/or potential publications.
Instructor(s): E. Chung
Area: Humanities, Social and Behavioral Sciences.

Cross Listed Courses

History of Art
AS.010.103. Introduction to the Art of Asia. 3.0 Credits.
A survey of the art and architecture of Asia, from the ancient world to the present and including the Indian subcontinent, China, Japan, Korea, and Southeast Asia.
Instructor(s): Staff
Area: Humanities.

AS.010.211. Monuments of Asia. 3.0 Credits.
An examination of selected architectural monuments from across Asia, including the Indian subcontinent, Southeast Asia, China, Japan, and Korea. Ancient to contemporary.
Instructor(s): R. Brown
Area: Humanities.
AS.010.305. Global Modern Art: Africa, Asia, the Pacific and the Americas. 3.0 Credits.
Artists around the world grappled with the modern, working through local concerns and struggles but continually engaged with counterparts in Europe, North America, and across the "global South." This course will introduce art, artists, movements, and institutions of modernism from approximately 1880 to the present and from outside of the northern Atlantic while critically examining the very notion of "global modernism."
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

Anthropology
AS.070.359. Korean War. 3.0 Credits.
This course takes the Korean War as a site to both explore: 1) contemporary historical and political transformations in East Asia and globally and 2) the ways in which violence, catastrophic loss, and separation are woven into everyday life. It will explore the Korean War through film, fiction, historiography, and draw on comparative materials in anthropology
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

History
AS.100.219. Chinese Cultural Revolution. 3.0 Credits.
The Cultural Revolution was Mao Zedong’s last attempt to transform Chinese society spiritually and structurally. The events of this period were marked by social upheaval, personal vendettas, violence, massive youth movements, and extreme ideological pressure. This course will explore the Cultural Revolution from a variety of perspectives, focusing on the relationship between events in China from 1966-1976, and their interpretation in China and the West during the Cultural Revolution decade and since.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.236. Chinese Cultural Revolution. 3.0 Credits.
The Cultural Revolution was Mao Zedong’s last attempt to transform Chinese society spiritually and structurally. The events of this period were marked by social upheaval, personal vendettas, violence, massive youth movements, and extreme ideological pressure. This course will explore the Cultural Revolution from a variety of perspectives, focusing on the relationship between events in China from 1966-1976, and their interpretation in China and the West during the Cultural Revolution decade and since. Previously offered as AS.100.219.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.243. China: Neolithic to Song. 3.0 Credits.
This class offers a broad overview of changes in China from Neolithic times through the Song Dynasty (roughly from 5000 BCE through the 13th century CE) and will include discussion of art, material culture, and literature as well as politics and society. Close readings of primary sources in discussion sections and extensive use of visual material in lectures will help students gain firsthand perspective on the materials covered. Not open to students who have previously taken AS.100.208. Cross listed with East Asian Studies
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.248. Japan in the World. 3.0 Credits.
This course is an introduction to Japan's history from 1800 to the present with emphasis on the influences of an increasing global circulation of ideas and people. Topics include the emperor system, family and gender, imperialism, World War II, the postwar economy, and global J-pop.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences.

AS.100.330. National Identity in 20th Century China & Japan. 3.0 Credits.
Using primary sources, including literature and film, we will explore the changing ways in which ideologues, intellectuals, and ordinary citizens defined national identity in 20th century China and Japan.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.347. Early Modern China. 3.0 Credits.
The history of China from the 16th to the late 19th centuries.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.348. 20th-Century China. 3.0 Credits.
The history of China from the last years of the Qing Empire to the post-Mao reforms.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.381. Religion, Medicine, and the Mind in Japan. 3.0 Credits.
This seminar explores the relationship between religion and medicine in treating disorders of the mind and soul throughout Japanese history. We will consider such topics as animal spirit possession, Buddhism, family-based care, psychotherapy, gender, and social withdrawal.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.385. Mobility and Encounter in the Medieval Indian Ocean. 3.0 Credits.
This seminar discusses forms of mobility and exchange—trade and travel, conquest and religious transformation, diasporas and migration, the spread of practices and technologies—across the Indian Ocean from the 8th to 16th centuries.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.398. Images of Postwar Japan. 3.0 Credits.
This seminar explores Japan's changing place in the world in the decades following World War II, with an emphasis on analyzing visual media such as photographs, films, advertisements, and comic books. Topics include relations with the U.S. and other countries in East Asia, particularly the two Koreas; the atomic bombings of Hiroshima and Nagasaki; and the global contexts for an expanding Japanese consumerism in the late 20th century.
Instructor(s): H. Kim.
AS.100.411. Readings in the History of Public Health in the 20th and 21st Centuries. 3.0 Credits.
The students will read major and some minor works in the history of global public health and will each develop their own concept of how and why the major institutions, professions, and practices associated with public health have evolved over the past long century. To help the students focus on their ideas, they will write three essays on particular aspects of the history.
Instructor(s): L. Galambos
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.733. Reading Qing Documents.
Open to advanced undergraduates with at least one semester of Classical Chinese. This course has several objectives. First and foremost, it is a hands on document reading class designed to familiarize students with the skills, sources, and reference materials necessary to conduct research in Qing history. To that end, we will spend much of our time reading documents. At the same time, we will engage in problem solving exercises designed to develop and enhance basic research skills. Finally, several important archive-based secondary works in the secondary literature are available on reserve for your reference. These works demonstrate the ways in which historians have recently applied archival skills (and materials).
Instructor(s): T. Meyer-Fong.

AS.100.422. Society & Social Change in 18th Century China. 3.0 Credits.
What did Chinese local society look like under the Qing Empire, and how did it change over the early modern era?
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.423. Multiethnic Japan. 3.0 Credits.
An advanced undergraduate seminar on the intertwined histories of race, ethnicity, and empire in Japan and its former colonies from the early twentieth century to the present.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.424. Women & Modern Chinese History. 3.0 Credits.
This course examines the experience of Chinese women, and also how writers, scholars, and politicians (often male, sometimes foreign) have represented women's experiences for their own political and social agendas. Cross listed with East Asian Studies.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.437. Late Imperial China: History and Fantasy. 3.0 Credits.
Students in this seminar will look at the ways in which Chinese and Western scholars, novelists, film-makers, and artists have represented China's Late Imperial period. We will look at the way foreigners have imagined China, and the ways in which Chinese writers past and present have fancifully, nostalgically, and inventively rendered their personal and national pasts. The course will explore issues of historical, geographical, and literary imagination. Cross-listed with East Asian Studies.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.482. Historiography Mod China. 3.0 Credits.
A survey of assumptions and approaches in the study of modern Chinese history, as written by Chinese, Japanese, and Western historians.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences.

A reading seminar on the interconnected histories and historiographies of Japan and Korea in the nineteenth and twentieth centuries.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences.

AS.100.614. Seminar in Modern Chinese History.
A seminar covering major milestones in research on late imperial and modern Chinese history, primarily in English. Open to undergraduates with the permission of the instructor.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences.
AS.140.346. History of Chinese Medicine. 3.0 Credits.
Students will study the most recent anthropological, philosophical, and historical scholarship on medicine in traditional and modern Chinese society. They will approach the topic from several angles including medical pluralism, the range of healers, domestic and literate medicine, gender, emergence of new disciplines, public health and the history of disease. The course relies on secondary sources and primary sources in English translation. Cross-listed with East Asian Studies.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.357. Science Fiction Movies in the East and West. 3.0 Credits.
What is a science fiction (SF) movie? How did SF movies and developments in science and technology influence each other during the twentieth century? What is the use of SF movies for societies? And why are SF movies much more popular in some countries than in others? By watching and analyzing classic and contemporary SF movies from the US, the Soviet Union, Japan, China, and other countries, we will search for answers to these questions. Special emphasis will be given to analyzing how historical, political, and cultural environments in different countries have influenced the production and acceptance of SF movies.
Instructor(s): D. Kim
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.398. Godzilla and Fukushima: Japanese Environment in History and Films. 3.0 Credits.
Juxtaposing Japanese environmental history and its reflection in popular media, the course will explore the intersection between technology, environment, and culture. The course will be accompanied by relevant movie screenings.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.665. History of Science and Technology in Asia.
Graduate level discussion of major historiography of science and technology in East Asia.
Instructor(s): Y. Frumer.

Political Science

AS.190.315. Asian American Politics. 3.0 Credits.
This course examines issues of political identity, political incorporation, and political participation of Asian Americans. Themes include Asian American panethnicity, the struggle for immigration and citizenship, Asian American electoral politics, political activism and resistance since the 1960s, and the impact of Asian Americans on the politics of race and ethnicity in the United States.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.320. Politics Of East Asia. 3.0 Credits.
Examines some of the central ideas and institutions that have transformed politics in the contemporary world through the lens of East Asia, focusing on Japan, South Korea, Taiwan, and China. Topics include state-society relations, late development, nationalism, democratization, political culture, social movements, and globalization.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences.

AS.190.330. Japanese Politics. 3.0 Credits.
This course introduces students to the major debates and issues of postwar Japanese politics. Topics include nationalism, electoral politics, civil society, and immigration.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.341. Korean Politics. 3.0 Credits.
This course introduces students to the historical and institutional foundations of modern South Korean politics. Topics include nationalism, political economic development, civil society, globalization, and ROK-DPRK relations. (CP)
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.427. Political Economy of Japan and Korea. 3.0 Credits.
This upper-level seminar examines some of the major debates and issues of postwar Japanese and South Korean political economy. Topics include nationalism, gender politics, civil society, immigration, and US-Japan-South Korea trilateral relations.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.442. Civil Society. 3.0 Credits.
This course explores classic and contemporary debates on the concept of civil society and critically examines its analytical value in light of recent developments. Topics include the relationship between civil society, the state, and markets, the role of civil society in development and democratization, social capital, and global civil society. This course is open to graduate students from any discipline. Advanced undergraduate students must obtain permission from the instructor and are expected to keep up with graduate students during class discussions.
Instructor(s): E. Chung
Writing Intensive.

AS.190.612. Comparative Citizenship and Immigration Politics.
Graduate students only. Examines the contemporary political dynamics of migration, citizenship, and race concentrating on North America, Europe and East Asia. We will focus on how citizenship and immigration policies shape immigrant political identities, claims, and strategies as well as how immigrants impact public debates and policies in receiving societies.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences.

Sociology

AS.230.166. Chinese Migration in Modern World History 1500’s-2000’s. 3.0 Credits.
This interdisciplinary course applies theories of economic sociology to examine the effects of Chinese overseas migration on modern world economy from the sixteenth century to the contemporary era. It examines the contribution of overseas Chinese to the development of capitalism in the following junctures: the East-West economic integration in the pre-modern era, China’s modern transformation after the Opium War (1839-1842), the making of US national economy in the early twentieth century, as well as the postwar economic miracles in the Pacific Rim, among others. Special Note: Fuills History requirement for GSCD track students.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.
AS.230.175. Chinese Revolutions. 3.0 Credits.
This course introduces the origins, operation and impacts of five major revolutions in modern China between 1850 and 1950. These include the Taiping Rebellion, the republican revolutions, federalist and southern automatic movements, labor strikes as well as peasant rebellions. It draws on the existing historiography that examines China’s transition from an empire to a republic, impacts of western and Japanese influences to China, as well as the continuity and change of Chinese social organizations. Cross list with International Studies and East Asian Studies. Fulfills IS History requirement.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.217. Chinese Overseas in Global History. 3.0 Credits.
This course examines the topics of Chinese overseas migration after the long sixteenth century. It investigates the following themes: First, the making of Chinese maritime frontier in the longterm trade and migration across the South China Sea and beyond; Second, economic functions of Chinese overseas networks in the East-West integration from the early modern era to the ongoing wave of globalization; Third, politics of identity and heritage in Chinese overseas communities. Course may not be taken by students that previously took AS.230.166.
Prerequisites: Course may not be taken by students that previously took AS.230.166.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.228. Colonialism in Asia and Its Contested Legacies. 3.0 Credits.
This course surveys the impacts of colonialism in East and Southeast Asia. Special attention will be paid to the social and economic development in British Singapore and Hong Kong as well as Japanese Korea and Taiwan. Topics include free-trade imperialism, colonial modernity, anticolonial movements, pan-Asianism, and post-war U.S. hegemony.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.275. Revolution, Reform and Social Inequality in China. 3.0 Credits.
This course explores various aspects of social inequality in China during the Mao Zedong and the post-Mao reform eras. We will examine inequality within villages, the rural/urban divide, urban inequality, education and health policies, and gender and ethnic inequality. Each of these issue areas will be tackled analytically, but the aim is also to understand what it was/is like to live in China during and after the Mao era. Formerly offered as AS.230.321.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.285. Maritime East Asia. 3.0 Credits.
This course examines the transnational connections among merchants and migrants in the waters of East and Southeast Asia from a historical and comparative perspective. We will explore how diplomatic ties, long-distance trade and migration contributed to the making of cosmopolitan cities such as Quanzhou (Zayton), Malacca, Fort Zeelandia (Formosa), Batavia, Manila, Singapore and Hong Kong in the region from the tenth century onwards. The course will close with an examination of how the transnational connections are relevant to understand interstate competition in Asia’s long twentieth century. Key subjects to be introduced include tribute trade system, trading diasporas, Euro-Chinese co-colonialism, pan-Asianism, as well as history and historiography of maritime silk road.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.336. Family, Gender and Sexuality in China. 3.0 Credits.
This course examines social changes in China since the beginning of the People’s Republic (1949) through the lenses of family, gender and sexuality. The first half of the course focuses on understanding family institutions, women’s status, gender relations and sexualities in connection with major historical transitions between 1949 and the present. The second half includes readings and discussions around several thematic topics regarding family, gender and sexuality in contemporary China in the broader context of politics, economy, and social norms.
Instructor(s): Y. Dong
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.351. Capitalism, Development and Resistance in South Korea. 3.0 Credits.
This course examines the trajectory of capitalist development in South Korea (hereafter, Korea) in the twentieth and the early twenty-first centuries. We will examine debates around the political economy of development in Korea as well as class formation and social and labor protest. This course is designed to help students explore the dynamics of capitalist development and workers’ movements in Korea as a case of late development in the global South. The course also draws on theoretical perspectives and methodological tools from comparative and world-historical sociology to better understand the Korean case.
Instructor(s): M. Kang
Area: Social and Behavioral Sciences.

AS.230.352. Chinese Diaspora: Networks and Identity. 3.0 Credits.
This course combines lecture and class discussion. It examines the history and historiography of Chinese overseas migration. Major issues include overseas Chinese as “merchants without empire,” Chinese exclusion acts in the age of mass migration, the “Chinese question” in postcolonial Southeast Asia, as well as the making and unmaking of Chinese identity in the current wave of globalization.
Prerequisites: Students may not have completed AS.230.217 previously.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.377. Colonialism and Anti-Colonialism. 3.0 Credits.
This seminar examines the theories and historiography of colonialism and anti-colonial movements. It focuses on the establishment of the colonial division of labor, comparative colonialism, identity formation, and nationalism as well as anti-colonial movement.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.
AS.230.415. Social Problems in Contemporary China. 3.0 Credits.
In this course we will examine contemporary Chinese society, looking at economic development, rural transformation, urbanization and migration, labor relations, changes in class structure and family organization, health care, environmental problems, governance, and popular protest. The course is designed for both graduate and undergraduate students. Undergraduates must have already completed a course about China at Hopkins. Cross-listed with East Asian Studies.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.435. The China Boom. 3.0 Credits.
This course addresses the origins, global impacts, and demise of China's economic ascendency as a world economic and political powerhouse at the turn of the twenty-first century. The course will cover the historical origins of the China boom and impacts of the boom on global political economic order. It will also address the social-political imbalances within China that contribute to the global financial crisis and recent slowdown of the Chinese economy. Particular topics include late imperial and Maoist legacies' relation to contemporary economic growth, stages of China's capitalist development, China's outward investment in the developing world, formation and limits of US-China economic symbiosis, and China's participation in global governance, among others.
Instructor(s): H. Hung
Area: Humanities
Writing Intensive.

Study of Women, Gender, Sexuality
AS.363.328. Beyond the Global West: Gender/Sexuality, Post-colonialism & Global Capitalism: Feminist Inquiries from Asian Perspectives. 3.0 Credits.
This course examines gender and sexuality issues in both East and South Asian Societies and situates subject matters in the broader contexts of post-colonialism, state formation, revolution and global capitalism.
Instructor(s): Y. Dong
Area: Humanities
Writing Intensive.

Center for Language Education
AS.373.111. First Year Heritage Chinese. 4.5 Credits.
This course is designed primarily for students who have no prior exposure to Chinese. The objective of the course is to help students build a solid foundation of the four basic skills—listening, speaking, reading, and writing in an interactive and communicative learning environment. The emphasis is on correct pronunciation, accurate tones and mastery of basic grammatical structures. Note: Students with existing demonstrable skills in spoken Chinese should take AS.373.111-112. No Satisfactory/ Unsatisfactory. Students may choose to attend either lecture at 12pm or 3pm on TTh. Cross-listed with East Asian Studies.
Instructor(s): J. Chen; N. Zhao; Y. Chiang.

AS.373.112. Second Year Heritage Chinese I. 3.0 Credits.
Introductory course in Modern Standard Chinese. Goals: mastery of elements of pronunciation and control of basic vocabulary of 800-900 words and most basic grammatical patterns. Students work first with Pin-Yin system, then with simplified version of written Chinese characters. Continuation of AS.373.115. Note: Student with existing demonstrable skills in spoken Chinese should take AS.373.111-112. Recommended Course Background: AS.373.115 or permission required.
Prerequisites: AS.373.115 or instructor permission
Instructor(s): J. Chen; L. Yin; N. Zhao; Y. Chiang.

AS.373.114. First Year Chinese II. 4.5 Credits.
For students who have significant previously-acquired ability to understand and speak Modern Standard Chinese. Course focuses on reading and writing. Teaching materials are the same as used in AS.373.115-116; however, both traditional and simplified versions of written Chinese characters are used. Lab required. Continuation of AS.373.111. Recommended Course Background: AS.373.111 or permission required.
Prerequisites: AS.373.111 or instructor permission
Instructor(s): N. Zhao.
AS.373.216. Second Year Chinese II. 4.5 Credits.
Consolidation of the foundation that students have laid in their first year of study and continued drill and practice in the spoken language, with continued expansion of reading and writing vocabulary and sentence patterns. Students will work with both simplified and traditional characters. Note: Students who have native-like abilities in comprehension and speaking should take AS.373.211-212. Recommended Course Background: AS.373.215 or Permission Required. Cross-listed with East Asian Studies
Prerequisites: AS.373.215 or instructor permission.
Instructor(s): A. Chen; J. Yin
Area: Humanities.

AS.373.313. Third Year Heritage Chinese II. 3.0 Credits.
This course is a continuation of AS.373.313. Students need to have native-level fluency in speaking and understanding Chinese. The course focuses on reading and writing. In addition to the textbooks, downloaded articles on current affairs may also be included on a regular basis. Recommended Course Background: AS.373.313 or Permission Required. Lab required.
Prerequisites: AS.373.313 or equivalent
Instructor(s): J. Yin
Area: Humanities.

AS.373.315. Third Year Chinese. 3.5 Credits.
This two-semester course consolidates and further expands students' knowledge of grammar and vocabulary and further develops reading ability through work with textbook material and selected modern essays and short stories. Class discussions will be in Chinese insofar as feasible and written assignments will be given. Cross-listed with East Asian Studies
Prerequisites: AS.373.216 or instructor permission
Instructor(s): A. Chen
Area: Humanities.

AS.373.316. Third Year Chinese II. 3.5 Credits.
This two-semester course consolidates and further expands students' knowledge of grammar and vocabulary and further develops reading ability through work with textbook material and selected modern essays and short stories. Class discussions will be in Chinese insofar as feasible, and written assignments will be given. Continuation of AS.373.315. Recommended Course Background: AS.373.315 or permission required.
Prerequisites: AS.373.315 or instructor permission
Instructor(s): A. Chen
Area: Humanities.

AS.373.415. Fourth Year Chinese. 3.0 Credits.
This course is designed for students who finished AS.373.316 with a C+ or above (or equivalent). Readings in modern Chinese prose, including outstanding examples of literature, newspaper articles, etc. Students are supposed to be able to understand most of the readings with the aid of a dictionary, so that class discussion is not focused primarily on detailed explanation of grammar. Discussion, to be conducted in Chinese, will concentrate on the cultural significance of the readings' content. Cross-listed with East Asian Studies
Prerequisites: AS.373.316 or instructor permission
Instructor(s): Staff
Area: Humanities.

AS.373.416. Fourth Year Chinese II. 3.0 Credits.
Continuation of AS.373.415. Readings in modern Chinese prose, including outstanding examples of literature, newspaper articles, etc. Students should understand most of the readings with the aid of a dictionary, so that class discussion need not focus primarily on detailed explanations of grammar. Discussion, to be conducted in Chinese, will concentrate on the cultural significance of the readings' content. Recommended Course Background: AS.373.415 or Permission Required. Cross-listed with East Asian Studies
Prerequisites: AS.373.415 or instructor permission
Instructor(s): L. Yin
Area: Humanities.

AS.373.451. Topics in Chinese Media. 3.0 Credits.
The main focus of this course is to expand the student's knowledge of four essential skills in Chinese language and to deepen the student's knowledge of Chinese culture. The course is taught based on various written and visual materials (including newspapers, journals, TV, movies, and short novels) to improve students' reading comprehension, maintain conversation skills through class discussion, increase understanding of the culture and society of China, and enhance writing ability through short compositions and a writing project. Recommended Course Background: Completion of four years of Chinese language or permission required.
Instructor(s): N. Zhao
Area: Humanities.

AS.373.491. 5th Year Chinese. 3.0 Credits.
Fifth Year Chinese is designed for students who finished fourth year regular or third year heritage Chinese course at JHU or its equivalent and wish to achieve a higher advanced proficiency level in Chinese. The goal of the course is to help students further develop their listening, speaking, reading and writing skills cohesively and to enhance students' understanding of Chinese culture and society through language learning.
Prerequisites: AS.373.416 or AS.373.314 or equivalent.
Instructor(s): N. Zhao.

AS.378.115. First Year Japanese. 4.5 Credits.
This course is designed for students who have no background or previous knowledge in Japanese. The course consists of lectures on Tuesday/Thursday and conversation classes on Monday/Wednesdays/Fridays. The goal of the course is the simultaneous progression of four skills (speaking, listening, writing, and reading) as well as familiarity with aspects of Japanese culture. By the end of the year, students will have basic speaking and listening comprehension skills, a solid grasp of basic grammar items, reading and writing skills, and a recognition and production of approximately 150 kanji in context. Knowledge of grammar will be expanded significantly in AS.373.215. No Satisfactory/Unsatisfactory. Student may choose to attend either lecture at 10:30 am or 12 pm on TTh. Cross-listed with East Asian Studies
Instructor(s): M. Johnson; S. Katagiri.
AS.378.116. First Year Japanese II. 4.5 Credits.
This course is designed for students who have no background or previous knowledge in Japanese. The course consists of lectures on Tuesday/Thursday and conversation classes on Monday/Wednesdays/Fridays. The goal of the course is the simultaneous progression of four skills (speaking, listening, writing, and reading) as well as familiarity with aspects of Japanese culture. By the end of the fall term, students will have basic speaking and listening comprehension skills, a solid grasp of basic grammar items, reading and writing skills, and a recognition and production of approximately 60 kanji in context. Knowledge of grammar will be expanded significantly in 2nd year Japanese. May not be taken Satisfactory/Unsatisfactory. Recommended Course Background: AS.378.115
Prerequisites: Prereq: AS.378.115 or instructor permission.
Instructor(s): M. Johnson; S. Katagiri.

AS.378.215. Second Year Japanese. 4.5 Credits.
Training in spoken and written language, increasing their knowledge of more complex patterns. At completion, students will have a working knowledge of about 250 Kanji. Recommended Course Background: AS.378.115 and AS.378.116 or equivalent.
Prerequisites: AS.378.116 or equivalent.
Instructor(s): M. Nakao
Area: Humanities.

AS.378.212. Second Year Japanese II. 4.5 Credits.
Continuation of Beginning Japanese and Intermediate Japanese I. Training in spoken and written language, increasing students’ knowledge of more complex patterns. At completion, students will have a working knowledge of about 250 Kanji. Lab required. Recommended Course Background: AS.378.215 or equivalent.
Prerequisites: Prereq: AS.378.215 or instructor permission
Instructor(s): M. Nakao
Area: Humanities.

AS.378.315. Third Year Japanese. 3.0 Credits.
Emphasis shifts toward reading, while development of oral-aural skills also continues apace. The course presents graded readings in expository prose and requires students to expand their knowledge of Kanji, grammar, and both spoken and written vocabulary. Cross-listed with East Asian Studies
Prerequisites: AS.378.215 AND AS.378.216 or instructor permission
Instructor(s): M. Nakao
Area: Humanities.

AS.378.316. Third Year Japanese II. 3.0 Credits.
Emphasis shifts toward reading, while development of oral-aural skills also continues apace. The course presents graded readings in expository prose and requires students to expand their knowledge of Kanji, grammar, and both spoken and written vocabulary. Lab required. Continuation of AS.378.315. Recommended Course Background: AS.378.315 or equivalent.
Prerequisites: AS.378.315 or equivalent.
Instructor(s): M. Nakao
Area: Humanities.

AS.378.396. Fundamentals of Japanese Grammar. 2.0 Credits.
This course is designed for students who have already studied 1st-year Japanese grammar and wish to develop a thorough knowledge of Japanese grammar in order to advance all aspects of language skills to a higher level. It is also appropriate for graduate students who need to be able to read materials written in Japanese. Recommended Course Background: AS.378.115-116 or equivalent.
Instructor(s): M. Johnson
Area: Humanities.

AS.378.415. Fourth Year Japanese. 3.0 Credits.
By using four skills in participatory activities (reading, writing, presentation, and discussion), students will develop reading skills in modern Japanese and deepen and enhance their knowledge on Kanji and Japanese culture. Recommended Course Background: AS.378.315 and AS.378.316 or equivalent.
Prerequisites: AS.378.316 or equivalent.
Instructor(s): M. Nakao; S. Katagiri
Area: Humanities.

AS.378.416. Fourth Year Japanese II. 3.0 Credits.
By using four skills in participatory activities (reading, writing, presentation, and discussion), students will develop reading skills in modern Japanese and deepen and enhance their knowledge on Kanji and Japanese culture. Lab required. Recommended Course Background: AS.378.415
Prerequisites: AS.378.415 or instructor permission
Instructor(s): M. Nakao; S. Katagiri
Area: Humanities.

This course is designed for graduate students (in East Asian Studies, Public Health, History of Medicine, History, etc.) and undergraduate students with a strong interest in improving Japanese reading skills. The main goal of the course is to learn strategies for reading and comprehending materials written in Japanese without using a dictionary. Specific strategies and techniques are introduced, followed by practice. Class materials include a broad spectrum of native materials, including novels, newspapers, scholarly articles, essays, historical papers, and so forth. A diverse range of articles and essays are selected to introduce and enforce various ways of reading Japanese effectively. 2 credits for undergraduate students.
Instructor(s): M. Johnson
Area: Humanities.

AS.380.101. First Year Korean. 4.5 Credits.
Introduces the Korean alphabet, hangeul. Covers basic elements of the Korean language, high-frequency words and phrases, including cultural aspects. Focuses on oral fluency reaching Limited Proficiency where one can handle simple daily conversations. No Satisfactory/Unsatisfactory. Cross-listed with East Asian Studies
Instructor(s): J. Song; S. Lee

AS.380.102. First Year Korean II. 3.0 Credits.
Focuses on improving speaking fluency to Limited Proficiency so that one can handle simple daily conversations with confidence. It provides basic high-frequency structures and covers Korean holidays. Continuation of AS.380.101. Recommended Course Background: AS.380.101 or permission required.
Prerequisites: AS.380.101 or instructor permission
Instructor(s): J. Song; S. Lee.

AS.380.201. Second Year Korean. 4.0 Credits.
Aims for improving oral proficiency and confident control of grammar with vocabulary building and correct spelling intended. Reading materials of Korean people, places, and societies will enhance cultural understanding and awareness. Project due on Korean cities. Existing demonstrable skills in spoken Korean preferred.
Prerequisites: AS.380.101 AND AS.380.102 or instructor permission
Instructor(s): S. Lee
Area: Humanities.
The Department of Economics offers programs designed to improve the understanding of important economic problems and to provide the tools needed for the critical analysis of these problems and for dealing with them in practice.

On the undergraduate level, the department provides both for those who want to become professional economists and for those interested in a specialty related to economics, such as business, law, government, history, health care management, or environmental engineering. Still other students are simply interested in improving their understanding of society or making informed assessments of economic policies as citizens or making wise decisions about personal finances.

On the graduate level, the department provides advanced training for students preparing for careers as professional economists. The program encompasses such fields as macroeconomics, microeconomic theory, econometrics, labor economics, international economics, industrial organization, economic development, and finance, with an emphasis on the application of economic theory and quantitative methods. Because of the small number of graduate students admitted, they can work closely with faculty in graduate courses and seminars, and have easy and informal access to faculty members.

### Undergraduate Programs

The introductory courses AS.180.101 Elements of Macroeconomics and AS.180.102 Elements of Microeconomics are open to all students. Courses at the 200-level have Elements of Economics (AS.180.101 and AS.180.102) as prerequisites.

AS.180.301 Microeconomic Theory (or AS.180.401 see below) and AS.180.302 Macroeconomic Theory courses have AS.180.101 and AS.180.102 as well as Calculus I (AS.110.106 or equivalent) as prerequisites. All 300-level courses above 301 and 302 have Microeconomic and/or Macroeconomic Theory (AS.180.301, AS.180.302) as prerequisites (or, with permission of the instructor, corequisites), as well as Elements of Economics and Calculus. Some 300-level courses have additional prerequisites; see individual course listings. Independent study is available, subject to the consent of the department and of the faculty member with whom the student wants to work.

Subject to the consent of the instructor, graduate courses at the 600-level are open to qualified undergraduates. The 600-level courses for which advanced undergraduates are most likely to be qualified are AS.180.601 Consumer & Producer Theory and AS.180.603 Macroeconomic Theory I.

### Requirements for the B.A. Degree

(Also see Requirements for a Bachelor’s Degree. (p. 7))

For both the economics major and minor, a minimum grade of C- or better is required for all courses meeting the requirements and courses may not be taken satisfactory/unsatisfactory. Courses from study abroad or taken at other universities may count towards requirements only if they are approved by the department’s director of undergraduate studies. Internships, independent studies, and intersessions courses do not apply towards major or minor requirements. Summer courses at universities other than Johns Hopkins DO NOT count toward the major or minor, except with prior approval of the Director of Undergraduate Studies for Economics.

### Major Requirements:

**Economics Core**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.180.101 Elements of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.102 Elements of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.301 Microeconomic Theory</td>
<td>4.5</td>
</tr>
<tr>
<td>or AS.180.401 Advanced Microeconomic Theory</td>
<td></td>
</tr>
<tr>
<td>AS.180.302 Macroeconomic Theory</td>
<td>4.5</td>
</tr>
<tr>
<td>AS.180.334 Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>or AS.180.434 Advanced Econometrics</td>
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</tbody>
</table>

**Economics Electives**

- Three 200- or 300-level economics courses  
- Two 300-level economics courses

**Mathematics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.110.106 Calculus I (Biology and Social Sciences)</td>
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<tr>
<td>or AS.110.108 Calculus I</td>
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**Statistics**

<table>
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<th>Course</th>
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<tr>
<td>EN.553.111 Statistical Analysis I</td>
<td>4</td>
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<tr>
<td>or EN.553.112 Statistical Analysis II</td>
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**Economics**

http://www.econ.jhu.edu/

The Department of Economics offers programs designed to improve the understanding of important economic problems and to provide the tools needed for the critical analysis of these problems and for dealing with them in practice.

AS.380.202. Second Year Korean II. 3.0 Credits.

Aims for improving writing skills with correct spelling. Reading materials of Korean people, places, and societies will enhance cultural understanding and awareness, including discussion on family tree. Continuation of AS.380.201. Recommended Course Background: AS.380.201 or equivalent.

**Prerequisites:** AS.380.201 or equivalent.

Instructor(s): S. Lee

Area: Humanities.

AS.380.301. Third Year Korean. 3.0 Credits.


**Prerequisites:** AS.380.202 or equivalent.

Instructor(s): S. Lee

Area: Humanities.

AS.380.302. Third Year Korean II. 3.0 Credits.

Emphasizes reading literacy in classic and modern Korean prose. By reading Korean newspapers and professional articles in one’s major, it enables one to be well-versed and truly literate. Continuation of AS.380.301. Cross-listed with East Asian Studies.

**Prerequisites:** AS.380.301 or instructor permission

Instructor(s): S. Lee

Area: Humanities.

AS.380.401. Fourth Year Korean. 2.0 Credits.

This course is designed for those who have finished AS.380.302 or beyond advanced mid level of competency in Korean in four skills. By dealing with various topics on authentic materials including news, articles on websites, short stories, this course aims to help students enhance not only linguistics knowledge and skills, but also current issues of Korea. It is expected that, by the end of the term, students will be able to discuss a variety of topics and express opinions fluently in both spoken and written language.

**Prerequisites:** AS.380.302 or instructor permission

Instructor(s): S. Lee

Area: Humanities.
or EN.553.211 Probability and Statistics for the Life Sciences
or EN.553.310 Probability & Statistics
or EN.553.311 Probability and Statistics for the Biological Sciences and Engineering
or EN.553.420 Introduction to Probability
or EN.553.310 Probability & Statistics
or EN.553.430 Introduction to Statistics
or AS.280.345 Public Health Biostatistics

* Students who use exam credits to satisfy the AS.180.101 Elements of Macroeconomics and/or AS.180.102 Elements of Microeconomics requirements must take additional courses in the department to reach a total of 10 courses in the department.

** Please note: 180.203 "Faculty Research in Economics", a S/U one-credit course, does not count as one of these three courses.

*** AS.180.401 Advanced Microeconomic Theory is a faster-paced and more intensive version of Microeconomic Theory AS.180.301. You can use either AS.180.301 or AS.180.401 to satisfy the requirement for the economics major.
Both AS.180.301 and AS.180.401 will be offered during the same time slot, so the logistics of switching from AS.180.301 to AS.180.401 should be seamless, should you decide to make the switch.
The prerequisites for AS.180.401, like the prerequisites for AS.180.301, are AS.180.102 and one semester of calculus.
Note: you may not take both AS.180.301 and AS.180.401.

**** AS.180.434 Advanced Econometrics is a faster-paced and more intensive version of Econometrics AS.180.334. You use can either AS.180.334 or AS.180.434 to satisfy the requirement for the economics major.
Both AS.180.334 and AS.180.434 will be offered during the same time slot, so the logistics of switching from AS.180.301 to AS.180.401 should be seamless, should you decide to make the switch.
Note: You may not take both AS.180.334 and AS.180.434.
Also Note: In Spring 2018 we will again offer both AS.180.334 and AS.180.434.

### Additional Notes for Students
- EN.553.111 (p. 211) Statistical Analysis I or equivalent (any of the Statistics courses listed above) is a prerequisite for Econometrics.
- Except for AS.180.301 (p. 211) Microeconomic Theory, AS.180.302 (p. 211) Macroeconomic Theory, AS.180.334 (p. 211) Econometrics, AS.180.521 (p. 211) Research in Economics, and AS.180.522 (p. 211) Senior Thesis the department does not necessarily offer all 200- to 500-level courses every year. Students should plan their programs accordingly, in consultation with faculty.
- The Senior Honors Thesis sequence (AS.180.521 (p. 211) Research in Economics and AS.180.522 (p. 211) Senior Thesis) cannot be used to satisfy any of the requirements for the major.

### Sample Program
A typical program might include the following sequence of courses:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.180.101 Elements of Macroeconomics</td>
<td>3</td>
<td>AS.180.102 Elements of Microeconomics</td>
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<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.180.301 Microeconomic Theory</td>
<td>4.5</td>
<td>AS.180.302 Macroeconomic Theory</td>
<td>4.5</td>
<td></td>
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<tr>
<td>200 level elective</td>
<td>3</td>
<td>200 or 300 level elective</td>
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<table>
<thead>
<tr>
<th>Junior</th>
<th>Fall</th>
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<th>Spring</th>
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<tbody>
<tr>
<td>AS.180.334 Econometrics</td>
<td>3</td>
<td>200 or 300 level elective</td>
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<table>
<thead>
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<th>Senior</th>
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<th>Spring</th>
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</table>

Total Credits: 41

* Total Credits of 41 include AS.180.106 Calculus and EN.550.111 Statistical Analysis.

** Students trying to take these courses after freshman or sophomore year are likely to run into serious schedule conflicts in the junior and senior years because of the need to fulfill the prerequisites for advanced courses. Consult with faculty at an early stage.

### Honors Program in Economics
Departmental honors are awarded to those students who satisfy the following requirements:

- All economics courses applied to the major have been taken in the department.
- AS.180.521 Research in Economics and AS.180.522 Senior Thesis. The thesis may not be counted as one of the five economics electives.
- A grade point average of at least 3.5 for all economics courses.

### Minor in Economics
Students with a major in another department may be awarded a minor in economics with satisfactory work in the following courses:

| AS.180.101 | Elements of Macroeconomics | 3 |
| AS.180.102 | Elements of Microeconomics | 3 |
| Four economics courses at the 200- or 300-level (not including 180.203) | 12 |
requirements must take additional courses in the department to reach a total of 6 courses.

**Center for Financial Economics (CFE)**

Founded in 2008 and housed in the Economics Department in the Krieger School of Arts and Sciences at Johns Hopkins, the Center for Financial Economics blends the study of finance and economics, providing in-depth training and cutting-edge research in both. The dual research and teaching missions of the Center are premised on the belief that a deep understanding of modern economies requires an integrated treatment of finance and the broader economic forces driving economic progress. The recent financial crisis vividly illustrates the vital need for improved understanding of these issues on the part of practitioners, policymakers, and academics.

The CFE offers an undergraduate minor, producing expertise in finance within the context of a top-notch liberal arts education. The minor will equip students with a thorough foundation in the workings of financial markets and their role in the broader economy, providing a foundation for careers in finance, business, academics, and government. The Center is working toward offering a financial economics major and a Ph.D. in financial economics.

**The Minor in Financial Economics**

The main objective of the minor is to provide students with training in the conceptual framework, guiding concepts, and technical tools of modern finance. The broader goal is to provide insights into the large and the small—the macro and micro—of how this framework helps us understand the workings of the economy. The minor in financial economics includes four required courses and two elective courses chosen from the list below.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.180.101</td>
<td>Elements of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.102</td>
<td>Elements of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.263</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.367</td>
<td>Investment-Portfolio Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Courses (Select two of the following)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.180.242</td>
<td>International Monetary Economics</td>
</tr>
<tr>
<td>or AS.180.238</td>
<td>Rethinking Economics After the Great Recession</td>
</tr>
<tr>
<td>or AS.180.248</td>
<td>Financial Writing and Analysis</td>
</tr>
<tr>
<td>or AS.180.262</td>
<td>Monetary Analysis</td>
</tr>
<tr>
<td>or AS.180.266</td>
<td>Financial Markets and Institutions</td>
</tr>
<tr>
<td>or AS.180.280</td>
<td>The History and Future of the Hedge Fund Industry</td>
</tr>
<tr>
<td>or AS.180.303</td>
<td>Topics in International Macroeconomics and Finance</td>
</tr>
<tr>
<td>or AS.180.311</td>
<td>Economics of Fixed Income Instruments</td>
</tr>
<tr>
<td>or AS.180.333</td>
<td>Macroeconomic Strategies</td>
</tr>
<tr>
<td>or EN.660.202</td>
<td>Financial Accounting</td>
</tr>
</tbody>
</table>

Total Credits: 18

The minor is open to all majors. A minimum grade of C- or better is required for all courses and they may not be taken satisfactorily/unsatisfactorily. One cannot take both the economics and financial economics minor. For economics majors, there is a restriction on double-counting: the two elective courses counting toward the minor cannot also count toward the economics major.

**Graduate Programs**

**Requirements for Admission**

The admission of each applicant is decided by the Department as a whole and rests upon his/her academic record (especially economics and mathematics courses), GRE test scores, recommendations of scholars and instructors, and other pertinent information including a match between the research interests of the applicant and the faculty. To apply for admission, applicants are required to upload unofficial transcripts of all previous college and university study to their online application. Failure to upload unofficial transcripts will result in an inability to complete and submit the online application. In addition, we require at least two letters of recommendation. These recommendation letters should come from individuals who can comment on your scholarly skills. All applicants must submit scores from the Graduate Record Examination. Admitted students nearly always have very high quantitative GRE scores. Foreign applicants, who have not earned a degree in a university where English is the sole language of instruction, must take the TOEFL to satisfy the department that they are fluent in English. The department requires the TOEFL with a minimum score of 100 (internet based), 600 (paper based) or 250 (computer based), or IELTS with a bandscore of 7 in place of the TOEFL.

Students should have a knowledge of economic theory and statistics and a strong background in mathematics including differential and integral calculus and linear algebra. Almost all of our students enter with at least two semesters of calculus and linear algebra. In admissions decisions, we like applicants to have taken other mathematics courses as well, including more advanced calculus, differential equations, probability, and real analysis. We especially welcome applications from under-represented minorities, as diversity is important in our graduate program.

**Requirements for the M.A. Degree**

The department does not admit students from outside Johns Hopkins University who intend to work only for an M.A. However, it does offer this degree as an intermediate step toward the Ph.D. or as a final degree to some of those who do not complete their doctoral work.

Beyond the general university requirements, the department requires for the master's degree either two years of satisfactory graduate course work or one year of satisfactory graduate course work and an acceptable master's essay.

**Requirements for the Ph.D. Degree**

**Basic Course Work.** Students take two years of course work. The first year is comprised of two semesters each of microeconomic theory, macroeconomic theory, and mathematical methods, and one-semester courses in statistics and econometrics. In the second year, students take electives – four in the fall semester and three in the spring semester. Students may also take relevant courses in related departments, such as Mathematics, Applied Mathematics and Statistics, Political Science, Public Health, Sociology and Anthropology.

**Comprehensive Exam.** This exam is administered by the department and consists of two written examinations designed to test the candidate's knowledge of both microeconomics and macroeconomics. The written examinations are taken before the beginning of the third term.

**Research Paper.** A research paper is submitted at the end of the fourth term.

**Dissertation.** This should be an original investigation worthy of publication, prepared under the supervision of three members of
the faculty. A dissertation proposal is due during the sixth term. The candidate must submit the dissertation in final typed form at least three weeks before the date of the Graduate Board Oral Examination. The committee that administers the examination includes faculty from outside the department. Though it is feasible to finish in four years, it is typical to complete the Ph.D. in five or six years.

Financial Aid
The department offers a Departmental Fellowship to all enrolled students. This fellowship covers full tuition costs plus an annual stipend of $29,000 and full student health insurance coverage. During a student’s first year of study, this fellowship support is provided with no teaching assistantship duties. Beginning in the second year of study, students who are performing satisfactorily, will again receive the same Departmental Fellowship coverage as in their first year. In addition, during years 2, 3, 4 and 5, this will involve a teaching or research assistantship assignment. The department guarantees financial support for a minimum of five years of graduate study, conditional on satisfactory performance and potentially a sixth year as well depending on student performance and the availability of funds.

Carl Christ Fellowship
In the academic year 1989–90, the department established the Carl Christ Fellowship fund to honor one of its faculty members for his distinguished service and achievements. The proceeds of the fund are used to support outstanding graduate students at the dissertation stage of their research.

For further information about graduate study in economics, contact the director of graduate admissions, Department of Economics at econadmissions@jhu.edu.

For current faculty and contact information go to http://econ.jhu.edu/directoryindex/faculty/

Faculty
Chair
Laurence M. Ball
Research Interest: Macroeconomics

Professors
Christopher Carroll
Research Interests: Macroeconomics, Public Finance

Brendan Daley
Research Interest: Finance

Gregory Duffee
Carl Christ Professor of Economics. Research Interest: Finance

Mark Gersovitz
Research Interests: Economic Development, Public Finance

Bruce Hamilton

Yingyao Hu
Research Interests: Econometrics, Empirical Industrial Organization, Labor Economics

Olivier Jeanne
Research Interests: International Macroeconomics, Monetary Policy

Edi Karni
Scott and Barbara Black Professor of Economics. Research Interests: Economics of Uncertainty and Information, Decision Theory, Microeconomic Theory

M. Ali Khan

Robert Moffit

John K. H. Quah
Research Interest: Microeconomic Theory

Richard Spady
Research Interests: Econometrics, Industrial Organization.

Jonathan Wright
Research Interests: Time Series Econometrics, Empirical Macroeconomics, Finance

Associate Professors
Ying Chen
Research Interests: Game Theory, Information Economics, Political Economy

Elena Krasnokutskaya
Research Interests: Industrial Organization, Applied Microeconomics, Applied Econometrics

Assistant Professors
Marcelo Fernandez
Research Interest: Economic Theory

Nicholas Papageorge
Broadus Mitchell Assistant Professor. Research Interests: Health, Labor and the Economics of Innovation

Professors Emeriti
Louis Maccini
Research Interests: Macroeconomic Theory, Money, Econometrics

H. Peyton Young
Research Interests: Game Theory, Evolutionary Economics, Microeconomic Theory

Fellows
Robert Barbera
Co-Director of the Center for Financial Economics. Research Interests: Real Interest Rate/Real Growth Linkages, Global Energy Supply/Demand Issues

Barclay Knapp
Research Interests: Managerial Economics, Business Strategy

Lecturers
Somasree Dasgupta
Research Interests: International Trade, Economic Growth, Macroeconomics

Kevin Heerdt
Research Interests: Derivatives, Corporate Governance, Role of Speculation, Alternative Investment Industry, The Financial Industry
Muhammad Husain  
Research Interests: Microeconomic Theory, Labor Economics, Econometrics

Lauren Liu  
Research Interest: Microeconometrics

Barbara Morgan  
Research Interests: Labor Economics, Public Policy

Ludmila Poliakova  
Research Interests: Macroeconomics, Development Economics

Joint Appointments
David Bishai  
Professor (Bloomberg School of Public Health) Research Interest: Health Economics.

Filipe Campante  
Research Interests: Political Economy and Development

Itay Fainmesser  
Assistant Professor (Carey School of Business) Research Interest: Business Economics

Steve H. Hanke  
Professor (Department of Environmental Health and Engineering) Research Interests: Applied Economics, Microeconomics, Macroeconomics, Finance.

Pravin Krishna  
Professor (SAIS) Research Interest: International Trade

Jian Ni  
Associate Professor (Carey Business School) Research Interests: Pricing Strategy, Industrial Organization, Healthcare

Mitsukuni Nishida  
Assistant Professor (Carey Business School) Research Interest: Industrial Organization

Alessandro Rebucci  
Assistant Professor (Carey Business School) Research Interests: Financial Institutions, International Finance, Macroeconomics, International Real Estate

Emilia Simeonova  
Assistant Professor (Carey Business School) Research Interests: Health Economics, Children's Health, Development Economics

Shubhranshu Singh  
Assistant Professor (Carey Business School) Research Interests: Marketing Strategy, Marketing Management

Carlos Vegh  
Fred H. Sanderson Professor of International Economics (SAIS) Research Interest: International Economics

Courses

**AS.180.101. Elements of Macroeconomics. 3.0 Credits.**
An introduction to the economic system and economic analysis, with emphasis on total national income and output, employment, the price level and inflation, money, the government budget, the national debt, and interest rates. The role of public policy. Applications of economic analysis to government and personal decisions. Prerequisite: basic facility with graphs and algebra.
Instructor(s): R. Barbera
Area: Social and Behavioral Sciences.

**AS.180.102. Elements of Microeconomics. 3.0 Credits.**
An introduction to the economic system and economic analysis with emphasis on demand and supply, relative prices, the allocation of resources, and the distribution of goods and services, theory of consumer behavior, theory of the firm, and competition and monopoly, including the application of microeconomic analysis to contemporary problems.
Instructor(s): B. Hamilton
Area: Social and Behavioral Sciences.

**AS.180.203. Faculty Research in Economics. 1.0 Credit.**
This course will consist of a series of informal lectures by various professors in the Department of Economics. Each lecture will consist of a description of a professional research project which he/she has undertaken over the course of his/her profession career. S/U grading only.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): B. Hamilton.

**AS.180.214. The Economic Experience of the BRIC Countries. 3.0 Credits.**
In 2001, Jim O'Neill, the Chief Economist at Goldman Sachs, coined the acronym BRIC to identify the four large emerging economies, Brazil, Russia, India and China. These economies have since had an amazing run, and have emerged as the biggest and fastest growing emerging markets. In this course, we look at the economic experiences of the BRIC countries for the past 50 years. We discuss the reasons that have contributed to their exceptional growth rates, with particular emphasis on their transformation into market economies. We also analyze the challenges that these countries continue to face in their development process.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences.

**AS.180.217. Game Theory in Social Sciences. 3.0 Credits.**
Game Theory is the study of multiple person decision problems in which the well-being of a decision maker depends not only on his own actions but also on those of others. Such problems arise frequently in economics, political science, business, military science and many other areas. In this course, we will learn how to model different social situations as games and how to use solution concepts to understand players' behavior. We will consider various examples from different fields and will play several games in class. The emphasis of the class is on the conceptual analysis and applications and we will keep the level of mathematical technicalities at the minimum – high school algebra and one term of calculus will be sufficient. Students who took AS.180.117 are not eligible to take AS.180.217.
Prerequisites: Students may not have previously taken AS.180.117;AS.180.102 or instructor permission
Instructor(s): Y. Chen
Area: Social and Behavioral Sciences.
AS.180.228. Economic Development. 3.0 Credits.
A comprehensive survey of economic behavior by households, farms and firms in poor countries and the role of and for governments. Discussions include measurement of income levels, economy-wide equilibrium, sources of growth, agriculture and industry, international trade and investment, savings, population, fertility, education, health, income distribution and public finances. Applies economic theory rigorously to interpret and evaluate the economic experience of poor countries. Diagnostic test on Elements of Economics is required in the second week. Grading based on 3 exams and one paper.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): M. Gersovitz
Area: Social and Behavioral Sciences

AS.180.238. Rethinking Economics After the Great Recession. 3.0 Credits.
The financial crisis that began in the United States in 2007 threw virtually the entire world into recession. This class will look at the causes of the crisis and at how it unfolded. It will look into the conventional wisdom of economists, circa 2006, and why that wisdom proved to be so wrong. It will examine the financial innovations that contributed to the crisis, at the reasons financial regulators were blindsided, and at the reforms enacted after the crisis.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): F. Norris
Area: Social and Behavioral Sciences
Writing Intensive.

AS.180.240. JHU Bologna: History of Banking. 3.0 Credits.
Economics course offered on the JHU Summer Program in Bologna. Permission required. Must be taken for a letter grade. Open to students on the JHU/Bologna summer program only.
Instructor(s): J. Faust; R. Barbera
Area: Social and Behavioral Sciences

AS.180.241. International Trade. 3.0 Credits.
Theory of comparative advantage and the international division of labor: the determinants and pattern of trade, factor price equalization, factor mobility, gains from trade and distribution of income, and theory and practice or tariffs and other trade restrictions. Recommended Course Background: AS.180.101.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences

AS.180.242. International Monetary Economics. 3.0 Credits.
This course presents International Monetary Economics theory and applies it towards gaining an understanding of recent events and current policy issues. The theory presented in this course covers a broad range of topics including exchange rate determination, monetary and fiscal policy in an open economy, balance of payments crises, the choice of exchange rate systems, and international debt. The insights provided by these theoretical frameworks will enable us to discuss topics such as the current global financial crisis, global financial imbalances, the Chinese exchange rate regime, and proposed changes in the international financial architecture.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences

AS.180.248. Financial Writing and Analysis. 3.0 Credits.
There is an immense chasm between economic and financial commentary in academic discussions and that provided by private sector analysts and the press. Some of the difference is merely semantic, but much of the difference has real substance. Academic and nonacademic commentators tend to simply write off the other as being clueless in some way. Sorting out which bits of each style of analysis are most valuable and synthesizing them into a coherent commentary is a rare and valuable skill. This is a hands-on course with a goal of building skills reading and writing commentary in financial economics. The course begins critically studying commentary regarding prominent topics in the news over the recent months and then moves to writing "explainer" pieces for publication on the Center for Financial Economics blog. Students will work in teams both analyzing commentary, and writing and critiquing the work of fellow students.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): F. Norris
Area: Social and Behavioral Sciences
Writing Intensive.

AS.180.252. Economics of Discrimination. 3.0 Credits.
This course examines labor market discrimination by gender, race and ethnicity in the United States. What does the empirical evidence show, and how can we explain it? How much of the difference in observed outcomes is driven by differences in productivity characteristics and how much is due to discrimination? How have economists theorized about discrimination and what methodologies can be employed to test those theories? What has been the impact of public policy in this area; how do large corporations and educational institutions respond; and what can we learn from landmark lawsuits? The course will reinforce skills relevant to all fields of applied economics, including critical evaluation of the theoretical and empirical literature, the reasoned application of statistical techniques, and analysis of current policy issues. Seniors by Permission Only.
Prerequisites: AS.180.102
Instructor(s): B. Morgan
Area: Social and Behavioral Sciences
Writing Intensive.

AS.180.261. Monetary Analysis. 3.0 Credits.
This course analyzes the financial and monetary system of the U.S. economy and the design and implementation of U.S. monetary policy. Among other topics, we will examine the role of banks in the economy, the term structure of interest rates, the stock market, the supply of money, the role of the Federal Reserve in the economy, the objectives of monetary policy in the United States and current monetary policy practice.
Prerequisites: AS.180.101 and AS.180.102
Instructor(s): L. Poliakova
Area: Social and Behavioral Sciences.

AS.180.263. Corporate Finance. 3.0 Credits.
This course is an introduction to the financial management of a corporation. Students study the following broad questions. How should a firm decide whether to invest in a new project? How much debt and equity should a firm use to finance its activities? How should a firm pay its investors? How do taxes affect a firm’s investment and financing decisions? What determines the value of a firm? The emphasis throughout the course is on the economic principles that underlie answers to these questions.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): G. Duffee
Area: Social and Behavioral Sciences.
AS.180.266. Financial Markets and Institutions. 3.0 Credits.
Understanding design and functioning of financial markets and institutions, connecting theoretical foundations and real-world applications and cases. Basic principles of asymmetric information problems, management of risk. Money, bond, and equity markets; investment banking, security brokers, and venture capital firms; structure, competition, and regulation of commercial banks. Importance of electronic technology on financial systems.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): J. Wright
Area: Social and Behavioral Sciences.

AS.180.268. Seminar on Financial Regulation. 3.0 Credits.
This course examines regulation of the financial system in the United States and its effects on the economy. It considers proposals for reform and the ongoing implementation of the Dodd-Frank Act of 2010. A major part of the course will be student research projects and class discussion of the projects.
Prerequisites: AS.180.261
Instructor(s): L. Ball
Area: Social and Behavioral Sciences.

AS.180.280. The History and Future of the Hedge Fund Industry. 3.0 Credits.
The precursors to modern hedge funds began more than 50 years ago, but in the 1990s the hedge fund, or alternative investments, industry began a period of rapid growth and evolution. With growth came controversy. Some argue that hedge funds, by allowing immense amounts of capital to be rapidly and freely deployed, play a vital role in pushing prices toward the efficient markets ideal. Others claim that hedge funds may accentuate speculative price dynamics, threatening the stability of the financial sector. While many hedge funds claim to offer outstanding returns to investors, data suggest that many clients end up paying high fees for unspectacular results. This course examines these and other controversies, while tracing the history of the alternative investments industry over the last 25 years.
Prerequisites: AS.180.101 AND AS.180.102 AND (AS.180.266 OR AS.180.263 OR AS.180.367)
Instructor(s): K. Heerdt
Area: Social and Behavioral Sciences.

AS.180.289. Economics Of Health. 3.0 Credits.
Application of economic concepts and analysis to the health services system. Review of empirical studies of demand for health services, behavior of providers, and relationship of health services to population health levels. Discussion of current policy issues relating to financing and resource allocation.
Prerequisites: AS.180.102
Instructor(s): D. Bishai
Area: Social and Behavioral Sciences.

AS.180.302. Macroeconomic Theory. 4.5 Credits.
The course provides a treatment of macroeconomic theory including a static analysis of the determination of output, employment, the price level, the rate of interest, and a dynamic analysis of growth, inflation, and business cycles. In addition, the use and effectiveness of monetary and fiscal policy to bring about full employment, price stability, and steady economic growth will be discussed.
Prerequisites: AS.180.101 AND (AS.110.106 or AS.110.107 or AS.110.108 or AS.110.109); AS.180.102 can be taken at the same time as AS.180.302.
Instructor(s): L. Poliakova
Area: Social and Behavioral Sciences.

AS.180.303. Topics in International Macroeconomics and Finance. 3.0 Credits.
The course will review selected topics in international macroeconomics and finance. The topics for the Fall of 2015 include: financial globalization; international portfolio diversification; the problems posed by “sudden stops” in capital flows to emerging markets; global imbalances and global demand rebalancing; how different exchange rate regimes have fared in the global financial crisis; sovereign default in the light of the Argentine experience; and the ongoing Russian currency and financial crisis. The course involves mathematical modeling as well as data analysis.
Prerequisites: Pre-reqs: AS.180.101 AND AS.180.102 AND AS.180.302
Instructor(s): O. Jeanne
Area: Social and Behavioral Sciences.

AS.180.309. Economics Of Antitrust. 3.0 Credits.
This course explores the economic rationale for, and consequence of, antitrust laws. In addition to economic analysis we will study landmark antitrust cases.
Prerequisites: AS.180.301
Instructor(s): E. Karni.

AS.180.310. Economics Of Antitrust. 3.0 Credits.
This course explores the economic rationale for, and consequence of, antitrust laws. In addition to economic analysis we will study landmark antitrust cases.
Prerequisites: AS.180.301 OR AS.180.401
Instructor(s): B. Hamilton
Area: Social and Behavioral Sciences
Writing Intensive.
AS.180.312. Evaluating Public Policy: Experimental and Quasi-Experimental Research Design in Social Science. 3.0 Credits.
The purpose of the course is to show how experimental, quasi-experimental and non-experimental methods can be used to advance scientific knowledge about topics in economics. It will teach students the empirical techniques required to analyze experimental and non-experimental data to draw causal inference. The course will begin with a primer on the use of experimental methods in economics, specifically in the context of evaluating welfare programs and labor market policies. Students will then proceed to learn the empirical methods that can be employed to establish cause and effect, both when data is obtained through a randomized control trial (experimental data), or when randomization occurs naturally (quasi-experimental data). The tools and topics that are covered will not only be relevant to economics students, but will also be of interest to students from other social science departments.
Prerequisites: AS.180.301 AND (EN.550.420 OR EN.550.310 OR EN.550.112 OR EN.550.113 OR EN.550.211 OR EN.550.311 OR EN.550.430 OR EN.550.435 OR EN.550.111 OR AS.280.345)
Instructor(s): S. Qayyum
Area: Social and Behavioral Sciences
Writing Intensive.

AS.180.314. Mathematical Economics. 3.0 Credits.
This course traces the extent to which modern economic theory, particularly as it pertains to pure competition in market and non-market games under the rationality postulate.
Instructor(s): M. Khan
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.180.317. Economics of Fixed Income Instruments. 3.0 Credits.
Students study economic principles and state-of-the-art mathematical models used to value fixed income securities and their derivatives. The course emphasizes advanced practical applications as well as theory. Students will develop their own computer code to price fixed-income instruments and evaluate their risks. Students must be familiar with both statistics and differential equations.
Prerequisites: AS.180.301 AND (EN.550.111 OR EN.550.112 OR EN.550.310 OR EN.550.420 OR EN.550.430) AND (AS.110.302 OR EN.550.291 or permission of the instructor)
Instructor(s): G. Duffee
Area: Social and Behavioral Sciences.

AS.180.334. Econometrics. 3.0 Credits.
Introduction to the methods of estimation in economic research. The first part of the course develops the primary method employed in economic research, the method of least squares. This is followed by an investigation of the performance of the method in a variety of important situations. The development of a way to handle many of the situations in which ordinary least squares is not useful, the method of instrumental variables, concludes the course.
Prerequisites: AS.180.301 OR AS.180.401, may be taken concurrently; One semester of calculus, AS.280.345 OR EN.540.305 OR EN.550.211 OR EN.550.111 OR EN.550.310 OR EN.550.311 OR EN.550.420 OR EN.550.435.
Instructor(s): M. Husain
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.180.336. Macroeconomic Strategies. 3.0 Credits.
Will sketch out a strategy for anticipating economic turning points. Business cycle basics, monetary policy/financial market/real economy interactions will be reviewed. Long-term growth issues will be explored.
Prerequisites: AS.180.101 AND AS.180.102 AND AS.180.302 or instructor permission.
Instructor(s): R. Barbera
Area: Social and Behavioral Sciences.

AS.180.345. Rationality: Meaning and Measurement. 3.0 Credits.
Economists generally work with a number of classic models of how people behave in different contexts. These models (such as utility maximization and expected utility maximization) are widely used because they are tractable and elegant, but are they also accurate models of human behavior? In this course, we will examine the axiomatic foundations of these models, explore their implications for choice behavior, and discuss the empirical and experimental strategies economists have developed to test these models.
Prerequisites: AS.180.301
Instructor(s): K. Quah
Area: Social and Behavioral Sciences.

AS.180.351. Labor Economics. 3.0 Credits.
The course discusses various issues in labor markets from the perspective of economic theory. We first study the major forces at work that shape labor market behavior; firms’ labor demand and workers’ labor supply. Then we discuss the equilibrium behavior of employment and wages. Using these tools, we also cover various applied topics in labor economics, such as minimum wage regulations, male-female wage differentials, human capital investment, worker mobility, and unemployment.
Prerequisites: AS.180.301
Instructor(s): M. Husain
Area: Social and Behavioral Sciences.

AS.180.352. Public Economics. 3.0 Credits.
This course explores issues related to expenditure and tax policies of governments, as well as views regarding the purpose of government and criteria for evaluating government actions. The course also includes a discussion of how group or collective choices are made within society, how environmental policies affect the level of pollution, and the importance of public debt.
Prerequisites: AS.180.301 OR AS.180.401
Instructor(s): M. Husain
Area: Social and Behavioral Sciences.

AS.180.354. Econometrics of Unobservables. 3.0 Credits.
Empirical data may not contain all the variables suggested by economic theories. This course introduces methodologies to identify and estimate economic models containing unobservables. Recommended Course Background: AS.180.301 and AS.180.334.
Instructor(s): Y. Hu
Area: Social and Behavioral Sciences.
AS.180.355. Economics of Poverty/Inequality. 3.0 Credits.
This course focuses on the economics of poverty and inequality. It covers the measurement of poverty and inequality, facts and trends over time, the causes of poverty and inequality with a focus on those related to earnings and the labor market, and public policy toward poverty and inequality, covering both taxation and government expenditure and programs. By the nature of the material, the course is fairly statistical and quantitative. Students should have an intermediate understanding of microeconomic concepts. Basic knowledge of regression analysis is also helpful.
Prerequisites: AS.180.301
Instructor(s): R. Moffitt
Area: Social and Behavioral Sciences.

AS.180.361. Rich Countries, Poor Countries. 3.0 Credits.
Why are some countries rich while some other countries poor? Why does a country's income per person generally grow over time? We try to analyze these questions using the theoretical and empirical growth literature. We will study seminal growth models, and also try to explain cross-country income differences in terms of factors like geography, institutions and global integration. Knowledge of regression analysis (including instrumental variables estimation) is required.
Prerequisites: AS.180.302 AND (AS.180.334 OR AS.180.434)
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences.

AS.180.363. Sex, Drugs and Dynamic Optimization: The Economics of Risky Behavior. 3.0 Credits.
We apply the tools of economic analysis to understand behaviors that are enjoyable today, but may have negative consequences in the future.
Prerequisites: (AS.180.301 OR AS.180.401) AND AS.180.302; AS.180.334 can be taken concurrently.
Instructor(s): N. Papageorge
Area: Social and Behavioral Sciences.

AS.180.365. Topics in Macroeconomics. 3.0 Credits.
This course builds on AS.180.302 (Macroeconomic Theory) to consider the leading macroeconomic controversies of today (such as the appropriate monetary and fiscal policies of the Federal Reserve and U.S. Government). The classes will include frequent student presentations.
Prerequisites: AS.180.302
Instructor(s): L. Ball
Area: Social and Behavioral Sciences.

AS.180.366. Investment-Portfolio Management. 3.0 Credits.
Prerequisites: (AS.180.301 OR AS.180.401) AND (EN.550.111 OR EN.550.112 OR EN.550.310 OR EN.550.311 OR EN.550.420 OR EN.550.430)
Instructor(s): J. Wright
Area: Social and Behavioral Sciences.

AS.180.368. Managerial Economic and Business Strategies. 3.0 Credits.
Seminar on quantitative concepts, decision-making, and strategy in business organizations. Overall context is ‘value’ – how it is measured and maximized long term. Microeconomic theory of the firm, competitive analysis, corporate finance.
Prerequisites: (AS.180.301 OR AS.180.401) AND (EN.550.111 OR AS.180.367 OR AS.180.263) or permission of the instructor.
Instructor(s): J. Knapp
Area: Social and Behavioral Sciences.

AS.180.371. Industrial Organization. 3.0 Credits.
Investigation of firm behavior in markets characterized by imperfect competition. Imperfect competition lies in between monopoly and perfect competition and characterizes most major industries in modern capitalist economies. Central issues to be covered in the course include what determines the intensity of competition? What determines the extent of entry and exit? How is it that some firms consistently dominate their industries?
Prerequisites: AS.180.301 OR AS.180.401
Instructor(s): E. Krasnokutskaya
Area: Social and Behavioral Sciences.

AS.180.389. Social Policy Implications of Behavioral Economics. 3.0 Credits.
Economists increasingly incorporate insights from psychology into models of rational decision-making. Known as "behavioral economics", this line of research considers how, for example, emotions, rules-of-thumb, biased beliefs and time-inconsistent preferences influence how we make choices. Behavioral economics increasingly pervades policy discussions on topics as diverse as: obesity, the role of media, subprime mortgages and voting patterns. Behavioral models are certainly novel, but do they help us to design superior social policies? With the goal of preparing students to address this question, this course (1) provides a thorough overview of the main contributions of behavioral economics, highlighting departures from more traditional economic models and (2) emphasizes how behavioral economic models might (or might not) improve how we think about social policy.
Prerequisites: AS.180.301 OR AS.180.401; AS.180.334 OR AS.180.434 can be taken concurrently.
Instructor(s): N. Papageorge
Area: Social and Behavioral Sciences.

AS.180.390. Health Economics & Developing Countries. 3.0 Credits.
Prerequisites: AS.180.301 or AS.180.401; Students may not take AS.180.390 if they took AS.180.391.
Instructor(s): M. Gersovitz
Area: Social and Behavioral Sciences
Writing Intensive.

AS.180.391. Economics of China. 3.0 Credits.
Discussion of the economic experience of Post-War China, primarily emphasizing topics rather than historical narrative: agriculture, industry including corporate governance and public enterprises, international trade, population, migration, education, health, public finances among other topics.
Prerequisites: AS.180.301 OR AS.180.401; Students may not take AS.180.390 if they took AS.180.391.
Instructor(s): M. Gersovitz
Writing Intensive.
AS.180.401. Advanced Microeconomic Theory. 3.0 Credits.
This course covers roughly the same material as Microeconomic Theory 180.301 but in a more formal and mathematically rigorous way. You can use either 180.301 or 180.401 to satisfy the requirement for the economics major. 180.301 and 180.401 are offered during the same time slot, so the logistics of switching from 180.301 to 180.401 should be seamless, should you decide to make the switch. This course is suitable for those students who prefer a more formal treatment of economic theory and who are planning to take some of the more technically demanding electives in economics at a later stage. NOTE: you may not take both 180.301 and 180.401.
Prerequisites: You may not take both AS.180.401 and AS.180.301; AS.180.102 and any two semesters of calculus (or equivalent)
Instructor(s): K. Quah
Area: Social and Behavioral Sciences.

AS.180.434. Advanced Econometrics. 3.0 Credits.
This is a faster-paced and more intensive version of Econometrics 180.334. You can use either 180.334 or 180.434 to satisfy the requirement for the economics major. This course is suitable for those students who prefer a more technical treatment of econometric methodologies. NOTE: you may not take both 180.334 and 180.434.
Prerequisites: Students may only receive credit for either AS.180.334 or AS.180.434; AS.180.301 or AS.180.401, one semester of linear algebra, one semester of calculus, AS.280.345 or EN.580.305 or EN.550.211 or EN.550.111 or EN.550.310 or EN.550.311 or EN.550.420 or EN.560.435.
Instructor(s): Y. Hu
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.180.501. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.180.502. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.180.522. Senior Thesis. 3.0 Credits.
Students enrolled in this course will complete the Senior Honors Thesis under the supervision of a thesis advisor (who will have been chosen by the student prior to registration for AS.180.521). The formal course instructor will be in charge of overseeing registration and submitting grades. He/she will also be available for discussions of progress or problems on the thesis. Please note that your thesis advisor can be any faculty member in the Department of Economics, and need not be the same person as the course instructor. (This course cannot be counted as one of the 5 elective economics courses required for the Economics Major.)
Prerequisites: AS.180.521
Instructor(s): Staff
Writing Intensive.

AS.180.595. Economic Internship. 1.0 Credit.
Instructor(s): L. Ball.

AS.180.597. Research. 3.0 Credits.
Instructor(s): N. Papageorge.

AS.180.599. Independent Study. 3.0 Credits.
Instructor(s): E. Krasnokutskaya; N. Papageorge; S. Dasgupta.

The mathematical theory of general static equilibrium. The course will emphasize the formal mathematical expression of economic ideas and the ability to give a loose economic intuition a coherent logical meaning. Different mathematical structures in general equilibrium theory will be isolated and discussed. The text will be Debreu’s book "Theory of Value". Recommended Course Background: AS.110.106, AS.180.301, and AS.180.302 or permission of the instructor.
Instructor(s): M. Khan
Area: Social and Behavioral Sciences.

The course will cover decision theories relevant to economics and their related analytical tools. We aim to discuss the following topics: standard theories of firm and consumer behavior; decision making under risk; revealed preference analysis; monotone comparative statics; bounded rationality.
Instructor(s): K. Quah.

AS.180.603. Macroeconomic Theory I.
A comprehensive treatment of macroeconomic theory, including static analysis of aggregate output employment, the rate of interest, and the price level; aggregative theory of investment, consumption, demand and supply of money; empirical work on aggregate relationships.
Instructor(s): C. Carroll.

First term: a comprehensive treatment of macroeconomic theory, including static analysis of aggregate output employment, the rate of interest, and the price level; aggregative theory of investment, consumption, demand and supply of money; empirical work on aggregate relationships. Second term: the macrodynamic theory of growth, cycles, unemployment and inflation, and selected subjects.
Instructor(s): O. Jeanne.

AS.180.605. Advanced Macroeconomics I.
Topics of recent research in macro-economics. Content will vary from year to year. Likely topics include implicit contract theory, search theory and unemployment, disequilibrium macroeconomic models, monetary policy and the control of inflation, contract-based rational expectations models, imperfect competition in macrodynamic models, business cycle models, empirical tests of rational expectations models, theories of investment behavior, and debt neutrality. Open to 2nd year Grad Students and up.
Instructor(s): L. Ball.
AS.180.606. Advanced Macroeconomics II.
Topics of recent research in macroeconomics. Prof. Ball's course covers nominal rigidities, dynamic-consistency theories of inflation, inflation inertia and the costs of disinflation, monetary policy, costs and benefits of price stability, benefits of output stabilization, alternative policy rules, measuring inflation, unemployment, efficiency-wage theories, the behavior of the NAIRU, macro in middle-income countries, high inflation and stabilization, currency crises. Prof. Carroll's course analyzes implications of the buffer-stock and habit formation theories of consumption for comovement of aggregate variables and asset pricing. The models are applied to study the phenomena of declining U.S. saving rate, the dynamic relationship between saving rates and growth, and the equity premium puzzle.
Prerequisites: Prereq: AS.180.603
Instructor(s): C. Carroll.

AS.180.607. Macroeconometrics I.
The course is an attempt to provide a framework for discussing the techniques that are used in macroeconomic analysis. Generally the bias that it has is one of looking at these from the perspective of someone analyzing macroeconomic data for policy analysis. Consequently, many of the applications considered are drawn from the type of research conducted in central banks and finance ministries. Its emphasis is therefore upon the issues raised by the analysis of time series of macro-economic data. Today there is an emerging literature that looks at micro-economic data as well as conducting cross-country studies. We will tend to ignore that material as the methods used in such research are essentially those of micro-econometrics, although sometimes with adjustments made to reflect the nature of macro-economic time series.
Prerequisites: AS.180.633
Instructor(s): J. Wright.

AS.180.608. Macroeconometrics II.
This course will cover a range of topics in time series econometrics and empirical macroeconomics and finance that arise in current research and policy analysis. Key topics include GMM estimation, filtering, forecasting, structural VARs, and modeling stock and bond returns. It assumes a knowledge of the basics of time series econometrics. Both theoretical and empirical work will be included. Bayesian simulation methods that are very important in current research methods will be emphasized. This course should be taken by people with an interest in either empirical macro or empirical finance and may be helpful in searching for a dissertation topic.
Instructor(s): J. Wright.

AS.180.609. Core Mathematics for Economics.
This course will develop the necessary mathematical language and tools that are to be regarded as a pre-requisite for graduate study in economics at Johns Hopkins. Specifically, the course will focus on set theory, linear algebra and real analysis.
Instructor(s): M. Khan
Area: Social and Behavioral Sciences.

AS.180.611. Economics of Uncertainty.
This course offers a review of subjective expected utility theory of decision making under uncertainty and choice based subjective probabilities. It also explores the motivation for the recent developments of non-expected utility theories under risk and under uncertainty. It examines the role of completeness and awareness in these theories as well as the theories of menu choice and random choice behavior.
Instructor(s): E. Karni
Area: Social and Behavioral Sciences.

This course traces the extent to which modern economic theory, particularly as it pertains to pure competition in market and non-market games under the rationality postulate, is grounded in the language of probability and measure theory. Special attention will be paid to the formal expression of ideas such as economic and numerical negligibility, on the one hand, and diffuseness and conditional independence of information, on the other. Towards this end, the course will develop rigorous formulations of basic ideas of (conceptual rather than computational) probability and apply them: first, to develop the fundamental theorems of welfare economics, including the core theorems; and second, to large anonymous and non-anonymous games as well as to finite-agent games with private information. The course will be self-contained from the technical point of view but will presuppose a level of mathematical maturity that ought typically to be achieved by taking courses such as AS.180.615 and AS.180.601
Instructor(s): M. Khan.

This course concerns dynamic optimization in both continuous and discrete time. More specifically, it develops Pontryagin's maximum principle and the Euler-Lagrange conditions in the calculus of variations, on the one hand, and the basic tools of deterministic dynamic programming, on the other. The course will be self-contained from the technical point of view but will presuppose a level of mathematical maturity that ought typically to be achieved by taking a course such as AS.180.600.
Instructor(s): M. Khan.

AS.180.622. Game Theory.
This course only runs the first half of the semester but is as challenging as a full semester course. Students registering for this doubly intensive course also need to register for the equally intensive course of AS.180.623, Economics of Information, that is also as challenging as a full semester course and runs the second half of the semester. These courses complement each other and should be taken together in one semester.
Corequisites: AS.180.623
Instructor(s): Y. Chen
Area: Social and Behavioral Sciences.

AS.180.623. Economics of Information.
This course only runs the second half of the semester but is as challenging as a full semester course. Students registering for this doubly intensive course also need to register for the equally intensive course of AS.180.622, Game Theory, that is also as challenging as a full semester course and runs the first half of the semester. These courses complement each other and should be taken together in one semester.
Prerequisites: AS.180.600 AND AS.180.601
Corequisites: AS.180.622
Instructor(s): E. Karni
Area: Social and Behavioral Sciences
Writing Intensive.
**AS.180.626. Computational Methods.**
This class will introduce students to the computational tools that are used to get things done in scientific research. Such tools include, but are not limited to, unix bash shell scripting, LaTeX/Beamer, virtual machines, git and github, tools for parallel computation, cloud services, and others. Brief treatments of special-purpose tools (like Mathematica for symbolic math) will conclude this part of the class. After this introduction, the course will involve an intensive introduction to the use of the Python language for scientific computation purposes, including a discussion of why Python dominates other choices like Matlab and Julia. The final third of the course will apply the tools in a practical application to a specific problem identified jointly between the instructor and the student. There is no required text; readings will be assigned in class. (The characteristic that distinguishes this class from alternatives is that this class will not teach specific algorithms nor frontier computational techniques; rather, it aims to expose students to a broad set of tools that they will use regularly thereafter).
Instructor(s): C. Carroll
Area: Social and Behavioral Sciences.

**AS.180.632. Topics in Applied Microeconometrics.**
This course teaches methods for using micro-data to recover structural parameters of microeconomic models. We cover static models, but focus largely on single-agent dynamic programming, including “full solution” methods along with innovations that permit circumvention of daunting computational tasks. Additional topics will be partially based on students’ interests, but will likely include: general equilibrium models, static and dynamic games, matching models, unobserved heterogeneity, structural methods with experimental data and biased expectations. The goal is to teach students to use structural methods in their own research, and so we will delve into the nuts and bolts of structural work, examining how researchers actually get from raw data to results. This includes: how the sub-sample for analysis is chosen, how the model is specified, how the programming problem is solved, which moments are generated, how these are matched to the analogous moments in the data and, importantly, how identification is established.
Instructor(s): N. Papageorge.

**AS.180.633. Econometrics.**
Mathematical models of economic behavior and the use of statistical methods for testing economic theories and estimating economic parameters. Subject matter will vary from year to year; statistical methods, such as linear regression, multivariate analysis, and identification, estimation and testing in simultaneous equation models, will be stressed.
Prerequisites: AS.180.636
Instructor(s): Y. Hu.

**AS.180.634. Panel Data Models & Applications.**
This course is a reading course for the panel data models in the economics department. We will focus on econometric theories that are commonly used in panel data analysis, although many of these techniques can be applied to other areas as well. In addition, we will discuss applications of these theories. The course material will start form chapter 10 & 11 in Wooldridge’s book which covers linear panel data models. And then we will discuss the discrete choice models from chapter 7 of Hsiao’s book. After these, we will try to read papers related to panel data models.
Instructor(s): Staff.

**AS.180.636. Statistical Inference.**
Theory and applications of statistical inference. Topics include probability and sampling, distribution theory, estimation, hypothesis testing, and simple regression analysis. Statistical applications will be drawn from economics. Limited to graduate students in Economics except by permission of the chair. Recommended Course Background: AS.110.201, AS.110.302
Instructor(s): Staff.

**AS.180.637. Microeconometrics I.**
This is an advanced graduate course on major econometric techniques and models that are used in empirical microeconomics. The first half of the course introduces econometric theories of nonlinear extremal estimation, nonparametric estimation, and semiparametric estimation. The second half illustrates applications of these theories to limited dependent variable models, selection models, and endogenous treatment models with unobserved heterogeneity.
Prerequisites: AS.180.601 AND AS.180.622 AND AS.180.633 AND AS.180.636
Instructor(s): L. Liu.

**AS.180.638. Microeconometrics II.**
This course is the second in the micro-econometrics sequence in the Economics Department. It will introduce a selection of models and techniques that are useful when a researcher wants to estimate a structural model, i.e. a model derived from economic theory. Structural models that try to incorporate restrictions derived from economic theory are used in empirical IO, but also in quantitative marketing research, labor economics and other fields that consider individual decision making. No attempt will be made to be comprehensive. Instead we will focus on a few areas that have been well-researched in recent years: dynamic discrete choice, microeconomic models with latent variables, program evaluation, the empirical analysis of auctions and non-separable models. Some topics will be included only if time permits. The models and methods developed for these areas are relevant for other cases. The emphasis is on the interaction between economic theory and econometrics.
Basic issues are specification and (nonparametric) identification, computational problems and the use of simulation, semi-parametric estimation to avoid functional form and distributional assumptions that cannot be derived from economic theory.
Prerequisites: AS.180.601 AND AS.180.622
Instructor(s): Y. Hu.

**AS.180.640. Topics in Economic Theory.**
In this course we will discuss a variety of topics in Economic Theory that are either not covered or only partially covered in the regular courses. Topics may include Individual and Social Choice Theory, Auctions Theory, Medical Decision Making. For each subject there will be introductory lectures followed by readings and students’ presentations of recent contributions.
Prerequisites: AS.180.601 AND AS.180.602
Instructor(s): E. Karni
Area: Social and Behavioral Sciences.

**AS.180.641. International Trade.**
This is a graduate course in international trade. It will develop basic analytical tools and frameworks used in the general equilibrium analysis of international trade. Recent research topics will be discussed in the second half of the course.
Prerequisites: AS.180.601 AND AS.180.603
Instructor(s): P. Krishna.
AS.180.642. International Monetary Economics.
A link between the balance of payments and asset accumulation/decumulation, microeconomics of international finance and open-economy macroeconomics. The section on open-economy macroeconomics covers approaches to balance-of-payments adjustments, theories of exchange rate determination and monetary, fiscal, and exchange-market policies under fixed and flexible rate regimes. Instructor(s): Y. Takahashi.

AS.180.643. Topics of Game Theory.
This course covers topics such as repeated games, dynamic games, bargaining and strategic communication.
Prerequisites: AS.180.622
Instructor(s): Y. Chen
Area: Social and Behavioral Sciences.

AS.180.645. Topics in Economic Theory.
This course will cover two topics in economic theory. We will cover the theory of monotone comparative statics and supermodular games; this topic will be useful to students doing research in theory or in structural econometrics, where comparative statics tools/insights are often needed for model building. The other half of the course will cover matching markets, which typically deal with assignment problems without the use of transfers. Examples of these include school choice, course allocation, and organ exchange. We will cover the theoretical underpinnings, field applications, and empirical evaluations of these markets.
Instructor(s): K. Quah; M. Fernandez
Area: Social and Behavioral Sciences.

AS.180.646. Revealed Preference and Comparative Statics.
The overall theme of this course is the observable implications of optimizing choice. We will cover the theory of monotone comparative statics and supermodular games. We also discuss results in the revealed preference literature, such as Afriat's Theorem, that deal with the consistency of data with different canonical models. The course is useful to students doing research in pure or applied theory, where comparative statics tools/insights are often needed for model building. It could also be interesting to those with an empirical focus who would like to know more about revealed preference approaches to testing models and drawing inferences from them.
Instructor(s): K. Quah
Area: Social and Behavioral Sciences.

AS.180.651. Labor Economics I.
Theories of the allocation of time and supply of labor, human capital, demand for labor, market equilibrium, and income distribution. As time allows, other topics, such as unemployment, unions, and compensating differences are discussed. Corequisite: AS.180.601
Instructor(s): R. Moffitt.

The course covers a set of numerical methods that are used to compute and estimate economic models, such as solution methods for nonlinear equation systems, numerical integration, approximation, and optimization. As examples, we discuss dynamic models and their applications in IO and labor economics, including dynamic discrete choice, dynamic games, two-step methods (CCP-based methods), and general equilibrium models.
Instructor(s): Y. Takahashi.

AS.180.662. Asset Pricing.
This course is an introduction and guide to the most important issues in asset pricing. It begins with classic concepts such as the Capital Asset Pricing Model and the Arbitrage Pricing Theory and continues through continuous-time dynamic no-arbitrage models. It covers both basic theory and classic empirical research. Recommended Course Background: AS.180.604, AS.180.633, AS.180.636 or instructor's permission.
Instructor(s): G. Duffee.

AS.180.672. Industrial Organization.
First term: This course covers methods in applied empirical Industrial Organization. The focus will be on the use of econometric analysis and data both for descriptive and measurement purposes, and to test the predictions of economic theories. The course will cover demand estimation, cost and production function estimation, and estimation of auction models. Second term: The emphasis in this course is on empirical analysis of firm behavior. The first part of the course focuses on models of the internal organization of the firm. The second part considers empirical analysis of firm behavior in markets, with an emphasis on the "new industrial economics."
Instructor(s): E. Krasnokutskaya.

AS.180.673. Advanced Economics of Labor.
This course is for graduate students at the 3rd year and above who wish to participate in a semester in-depth readings and discussion topics in labor economics and in econometric methods typically used in labor economics and in many other applied microeconomics fields. Students will have to participate in discussions of materials in each class. The topics covered in each semester are partly a function of student interest and their dissertation topics.
Instructor(s): R. Moffitt
Area: Social and Behavioral Sciences.

AS.180.690. Advanced Econometrics.
Advanced econometric techniques are often essential to innovative empirical work, but finding and implementing the right methods for a particular problem poses formidable challenges. This course/seminar aims to address these challenges by combining lectures and discussions of foundational econometric methods in areas of student interest (whether those interests be specific for thesis work or more speculative) with examples of implementation, including software development, in more of a 'workshop' environment. The emphasis will be on drawing on the resources of econometric theory to address specific empirical issues while at the same time developing implementation skills.
Instructor(s): R. Spady.

This course is for students working on the dissertation for the Ph.D. in Economics. It is graded pass-fail
Instructor(s): G. Duffee
Area: Social and Behavioral Sciences.

This is a weekly seminar series that brings in speakers from other universities to present their research in the field of applied microeconomics. Graduate Students only.
Instructor(s): Y. Hu
Writing Intensive.

This is a seminar series devoted to the presentation of research in microeconomic theory, typically by speakers from outside the department. Graduate students only.
Instructor(s): M. Khan.
**AS.180.696. Macroeconomics Workshop.**
This course features lectures by economists from other universities. They present research findings at the frontier of the field. Graduate students only.
Instructor(s): C. Carroll.

**AS.180.697. Research Seminar.**
The purpose of this seminar is to train students to do research in economics. This course is for second year graduate students in the Ph.D program in Economics. Graduates Students Only.
Instructor(s): E. Karni.

**AS.180.698. Research/Teaching Practicums.**
The purpose of the Ph.D. program in economics is to train students to teach and to do research in economics. This course is for graduate students in the Ph.D. program in economics to obtain graduate credit for work off campus that provides training and the development of skills in teaching and/or research. Before the practicum is begun, the graduate student must identify a sponsoring faculty member or seek permission from the student’s faculty adviser. The faculty member or adviser must sign a form that certifies that graduate credit will be granted, verifies the nature of the work to be performed by the student, and explains how the practicum helps to fulfill a degree requirement. Once completed, the sponsoring faculty member or adviser submits a grade of pass or fail for the student. The course may be used for curricular practical training.
Economic majors / Graduate students only.
Instructor(s): Staff.

**AS.180.899. Independent Study.**
Instructor(s): Staff.

**Cross Listed Courses**

**Sociology**

**AS.230.374. Poverty and Public Policy. 3.0 Credits.**
This course examines the causes and consequences of U.S. urban poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations scholars have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Enrollment restricted to Social Policy minors only.
Prerequisites: Students that took AS.360.372 may not take AS.230.374.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

**AS.360.247. Introduction to Social Policy: Baltimore and Beyond. 3.0 Credits.**
This course will introduce students to basic concepts in economics, political science and sociology relevant to the study of social problems and the programs designed to remedy them. It will address the many inequalities in access to education and health care, unequal treatment in the criminal justice system, disparities in income and wealth, and differential access to political power. The focus will be on designing effective policies at the national and local level to address these pressing issues. This course is open to all students, but will be required for the new Social Policy Minor. The course is also recommended for students who are interested in law school, medical school, programs in public health, and graduate school in related social science fields. This course does not count as one of the required courses for the Economics major or minor, but it is required for the Social Policy Minor. Cross list with Sociology, Economics and Political Science. Freshman, Sophomore and Juniors only.
Instructor(s): B. Morgan; D. Schlozman; S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

**AS.360.372. Poverty and Public Policy. 3.0 Credits.**
This course examines the causes and consequences of U.S. urban poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations scholars have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Permission of instructor required.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

**AS.360.380. Making America Social Policy. 3.0 Credits.**
This course analyzes the distinctive US welfare state in historical and comparative perspective. We begin with a survey of the policy context, an historical overview from the poorhouses through the Great Society, and a tour of welfare states across the rich democracies. We then survey developments – and explain the actual workings of policy – across jobs, education, welfare, pensions, and health care. We explore the institutional and political factors behind their divergent trajectories through conservative revival and the age of Obama. Students will write a seminar paper exploring policy development over time in a program or area of their choosing. Enrollment restricted to Social Policy minors only.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences
Writing Intensive.
AS.360.528. Problems in Applied Economics. 2.0 Credits.
This course focuses on a monetary approach to national income determination and the balance of payments. Money and banking, as well as commodity and financial markets, are dealt with under both central banking, as well as alternative monetary regimes. Particular emphasis is placed on currency board systems. Students learn how to properly conduct substantive economic research, utilizing primary data sources, statistical techniques and lessons from economic history. Findings are presented in the form of either memoranda or working papers of publishable quality. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Advanced excel programming skills are required and students are expected to be pre-screened for research at the Library of Congress in Washington, D.C.. Bloomberg certification is a requisite.
Prerequisites: EN.660.203
Instructor(s): S. Hanke
Writing Intensive.

EN.570.428. Problems in Applied Economics. 3.0 Credits.
This course focuses on a monetary approach to national income determination and the balance of payments. Money and banking, as well as commodity and financial markets, are dealt with under both central banking, as well as alternative monetary regimes. Particular emphasis is placed on currency board systems. Students learn how to properly conduct substantive economic research, utilizing primary data sources, statistical techniques and lessons from economic history. Findings are presented in the form of either memoranda or working papers of publishable quality. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Advanced excel programming skills are required and students are expected to be pre-screened for research at the Library of Congress in Washington, D.C.. Bloomberg certification is a prerequisite.
Prerequisites: EN.660.203 AND AS.180.101 AND AS.180.102
Instructor(s): S. Hanke
Area: Social and Behavioral Sciences
Writing Intensive.

EN.570.470. Applied Economics & Finance. 3.0 Credits.
This course focuses on company valuations, using a Probabilistic Discounted Cash Flow Model. Students use the model and primary data from financial statements filed with the Securities and Exchange Commission to calculate the value of publicly-traded companies. Using Monte Carlo simulations, students also generate forecast scenarios, project likely share-price ranges and assess potential gains/losses. Stress is placed on using these simulations to diagnose the subjective market expectations contained in current objective market prices, and the robustness of these expectations. During the weekly seminar, students company valuations are reviewed and critiqued. A heavy emphasis is placed on research and writing. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Advanced excel programming skills are required and students are expected to be pre-screened for research at the Library of Congress in Washington, D.C.. Bloomberg certification is a prerequisite.
Prerequisites: EN.660.203 AND (EN.570.428 OR AS.360.528)
Instructor(s): S. Hanke
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences
Writing Intensive.

EN.570.504. Financial Market Research. 3.0 Credits.
This course investigates the workings of financial, foreign exchange, and commodity futures markets. Research is focused on price behavior, speculation, and hedging in these markets. Extensive research and writing of publishable quality are required. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. An approved research proposal is a prerequisite.
Instructor(s): S. Hanke
Writing Intensive.

English

http://english.jhu.edu/

The Department of English offers separate undergraduate and graduate programs, each designed to suit the needs of its particular student body. The undergraduate program, in the context of university requirements and elective courses, provides the basis for a liberal education and prepares students for graduate work or professional schools, such as medicine and law, as well as professional teaching and literary scholarship. The graduate program prepares advanced students for professional teaching careers in English literature.

Facilities

Besides the Sheridan Libraries, Hopkins students have easy access to the 12 million volumes and innumerable historical manuscripts of the Library of Congress, as well as the library at Dumbarton Oaks, the Folger Library, the Freer Library, the library of the National Gallery, and many other specialized public collections. Students learn about advances in research and criticism and confer with leading American and European scholars and critics through participation in the activities of the Tudor and Stuart Club, the ELH Colloquium, and the department's other programming.

Undergraduate Programs

Requirements for the B.A. Degree
(Also see Requirements for a Bachelor’s Degree (p. 7).)

In addition to demonstrating foreign language proficiency in at least one classical or modern foreign language, the English major requires students complete general courses in the humanities and social science, a required course in literary study (AS.060.107 Introduction to Literary Study), and nine additional English courses, of which at least three must be literature before 1800. Within the nine additional English courses, at least two and no more than four courses must be designated as lecture courses. Students may identify lecture courses by the presence of the POS-Tag ENGL-LEC in a course description in the schedule of classes. Pre-1800 literature courses are identified by the POS-Tag ENGL-PR1800. Additional details include:

- Only two courses towards the nine required English courses for the major may be taken outside of the department and those must be cross-listed with the English department.
- Only two independent studies or senior essay courses may apply towards the major.
- Students must earn a grade of C- or better in all major requirements and courses may not be taken satisfactory/unsatisfactory.
- Up to two courses taken through approved study abroad programs may be applied towards the major with approval of the director of undergraduate studies.
### Major Requirements:

- Two courses in the humanities or social sciences: 6
- Foreign language proficiency through the intermediate level: 0-17
- AS.060.107 Introduction to Literary Study: 3

### Nine Additional English Courses (divided as follows): **

- One non-lecture course in pre-1800 literature: 3
- Two courses in pre-1800 literature: 6
- Six 200 to 400-level English courses: 18

Total Credits: 36-53

* Should be taken no later than sophomore year.
** Students are required to take at least two lectures courses and up to four lecture courses may apply towards this requirement.

### Advising for Students

All students, whether their goals are professional or not, should choose courses in consultation with their major advisor to suit their individual needs and satisfy departmental requirements. Students planning to enter graduate school in English should study a second foreign language. Students who have not yet been assigned to a major advisor may discuss departmental requirements and curriculum planning with the director of undergraduate studies.

### Sample Program

#### Freshman

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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Intro Course in Humanities or Social Sciences</td>
<td>3</td>
<td>AS.060.107 Introduction to Literary Study</td>
<td>3</td>
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<tr>
<td>Intro Course in Humanities or Social Sciences</td>
<td>3</td>
<td>English Elective at 200-level (ENGL-LEC)</td>
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<td><strong>Total</strong></td>
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#### Sophomore

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<th>Credits</th>
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<tbody>
<tr>
<td>Foreign Language</td>
<td>4</td>
<td>Foreign Language</td>
<td>4</td>
</tr>
<tr>
<td>Pre-1800 Course at 200-level</td>
<td>3</td>
<td>English Elective at 300-level</td>
<td>3</td>
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<td><strong>Total</strong></td>
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#### Junior

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<th>Fall</th>
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<tbody>
<tr>
<td>Foreign Language</td>
<td>3</td>
<td>Foreign Language</td>
<td>3</td>
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<tr>
<td>Pre-1800 Course at 300-level</td>
<td>3</td>
<td>English Elective at 300-level</td>
<td>3</td>
</tr>
<tr>
<td>English Elective at 200-level (ENGL-LEC)</td>
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<tr>
<td><strong>Total</strong></td>
<td>9</td>
<td><strong>Total</strong></td>
<td>6</td>
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#### Senior

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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>English Elective at 300-level</td>
<td>3</td>
<td>Pre-1800 Course at 200- or 300-level</td>
<td>3</td>
</tr>
<tr>
<td>English Elective at 300-level</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
<td>6</td>
<td><strong>Total</strong></td>
<td>3</td>
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Total Credits: 50

### Honors in English

Departmental honors are awarded to undergraduate English majors who achieve a cumulative average of 3.6 or higher for all English courses taken to satisfy the major requirements. For more information about Honors in English, contact the director of undergraduate studies in English.

### Senior Essay Option

Majors with a cumulative G.P.A. of 3.8 in English courses by the end of the fall semester of their junior year may apply to write a senior essay in the fall of their senior year. For further information and deadlines, contact the director of undergraduate studies in English.

### English Minor

Students who wish to graduate with a minor in English must take AS.060.107 Introduction to Literary Study, generally within one year of declaring the minor. Six additional English courses are required, of which at least two and no more than three must be lecture courses. At least one of the six courses must be a pre-1800 course. Students must earn a grade of C- or better in all minor requirements and courses may not be taken satisfactory/unsatisfactory.

### Minor Requirements:

- AS.060.107 Introduction to Literary Study: 3
- One course in pre-1800 literature: 3
- Four additional English courses: 12

Total Credits: 18

### Graduate Program

The Department of English offers advanced programs and guided research leading to the Ph.D. degree in English and American literature in the following major literary fields: the Renaissance, the 18th century, the Romantic period, the Victorian period, American literature, and 20th-century literature.

The department accepts only full-time students working toward the Ph.D.; there is no autonomous M.A. program. Because of its small size and the close association between faculty and students, the department is able to offer an intensive program leading to the Ph.D. in five years.

### Requirements for the Ph.D. Degree

Students are required to enroll in three graduate courses in each of the semesters of their first year of study and two in each of the semesters of their second year. By the end of the third year, students will have completed 10 graduate seminars, an oral examination in two fields, and examinations in one or two foreign languages. Fourth-year students will receive dissertation fellowships.

Teaching experience is regarded as an important part of the graduate program, and graduate students are required to teach in the department’s literature and expository writing courses during their second, third, and fifth years at Hopkins.

For further information about graduate study, contact the graduate coordinator at the Department of English or go to [http://english.jhu.edu/graduate/](http://english.jhu.edu/graduate/).

For current faculty and contact information go to [http://english.jhu.edu/people/](http://english.jhu.edu/people/)

### Faculty

**Chair**

Mark Thompson

19th- and 20th-century African-American literature, 20th-century German Idealism, French philosophy and aesthetics, theory.
Professors
Sharon Achinstein
Sir William Osler Professor of English: Early modern literature, poetry and poetics, gender

Christopher Cannon
Bloomberg Distinguished Professor: Medieval literature, philosophy

Mary Favret
British Romanticism, late 18th-early 19th-century English literature, war studies, gender and genre, literature and violence

Lawrence Jackson
Bloomberg Distinguished Professor: African American Literature, Literary History, Biography, American History

Douglas Mao
British, Irish, and U.S. poetry and fiction since 1860; interdisciplinary study of modernism.

Andrew Miller
Literature and moral philosophy; nineteenth century British literature; literary theory

Christopher Nealon
American literature, aesthetic theory, poetry and poetics, the history of sexuality

Mark Thompson
19th- and 20th-century African-American literature, 20th-century German Idealism, French philosophy and aesthetics, theory.

Associate professors
Andrew Daniel
Early modern literature, critical theory, aesthetics.

Jared Hickman
American literature, intellectual and cultural history of Atlantic (anti) slavery, religion and radical politics, critical race studies.

Nadia Nurhussein
African American literature, late 19th- and early 20th-century American literature, Poetry and Poetics

Jesse Rosenthal
American literature, aesthetic theory, poetry and poetics, the history of sexuality.

Assistant professors
Jeanne-Marie Jackson
Theory of the novel, literature and philosophy, sub-Saharan African literature, Russian realism, global regionalisms.

Professors emeriti
Sharon Cameron

Frances Ferguson
Literature, aesthetic theory, and moral/legal philosophy in the 18th and early 19th centuries.

Neil Hertz
Professor Emeritus (Humanities): Romantic literature and critical theory.

Ronald Paulson

Eric Sundquist
Andrew W. Mellon Professor Emeritus of the Humanities: American literature and culture, including African American and Jewish American; literature of the Holocaust.

Research professor
Larzer Ziff
Caroline Donovan Professor Emeritus of English Literature: American literature.

Joint appointments
John T. Irwin
Professor (Writing Seminars): American literature.

Lecturers
Aliza Watters
Lecturer: Expository Writing Program

Anne-Elizabeth Murdy Brodsky
Senior Lecturer: Expository Writing Program.

Williams Evans
Senior Lecturer: Expository Writing Program.

Patricia Kain
Senior Lecturer and Director: Expository Writing Program.

George Oppel
Lecturer: Expository Writing Program.

Marisa O’Connor
Lecturer: Expository Writing Program.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.060.100. Introduction to Expository Writing. 3.0 Credits.
Introduction to "Expos" is designed to introduce less experienced writers to the elements of academic argument. Students learn to recognize "The Fundamental Structure of Academic Argument" as they learn to read and summarize academic essays, and then they apply the fundamental structure in academic essays of their own. Classes are small, no more than 10 students, and are organized around three major writing assignments. Each course guides students' practice through pre-writing, drafting, and revising, and includes discussions, workshops, and tutorials with the instructor. In addition to its central focus on the elements of academic argument, each "Intro" course teaches students to avoid plagiarism and document sources correctly. "Intro" courses do not specialize in a particular topic or theme and are available to freshmen only.
Instructor(s): A. Brodsky; M. O’Connor; P. Kain; W. Evans
Area: Humanities
Writing Intensive.
AS.060.102. The Novel and the American Family. 3.0 Credits.
While America and the “American Dream” promise the possibility of unlimited individual development, the American family has often resisted this promise and cramped America’s style. In this course we will explore works by Philip Roth, Eudora Welty, Alice Walker, and Jonathan Franzen that dramatize this tension in devastating and hilarious ways. Against the backdrop of post-WWII America, these writers struggle with issues of race, sex, and the erosion of tradition, shedding light on the challenging relation between the individual and the family.
Instructor(s): R. Day
Area: Humanities
Writing Intensive.

AS.060.103. Novels After 9-11. 3.0 Credits.
This course explores various novels written in English in the wake of the tragedy of 9-11, from various perspectives around the globe. It asks how the form of the novel responded to the events of that date and its aftermath, and in doing so, considers the role of art in shaping our understanding of global events, violence, and the forces that produce them. This course offers a greater appreciation of the novel and its role in history, as well as a framework for comparing different perspectives on a major historical event. It should improve your skills as a reader of fiction and analyst and judge of what you read. In the course of the semester you will: 1) Survey how novels from a variety of positions and perspectives represent and understand the events of 9-11. 2) Learn to analyze the form of the novel, its various elements, and its role in culture and history. 3) Read and evaluate reviews of major novels, from different contexts. 4) Learn to write an intelligent and informed review of a novel.
Instructor(s): M. Favret
Area: Humanities
Writing Intensive.

AS.060.104. Counterfactual Literature and Film. 3.0 Credits.
This course will concern the imagination of our unled lives—the lives we might have led but have not. Robert Frost’s “The Road Not Taken” is the most familiar instance of this preoccupation, but Frost is only one of many artists for whom unled lives have been an ongoing concern—Thomas Hardy, Henry James, Virginia Woolf, Philip Larkin, Ian McEwan, and Sharon Olds are among the many others. Why are people so interested in what has not happened to them? And why should writers and film-makers in particular be so interested in these non-events? This course will discuss and activities. Pre 1800 course.
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.107. Introduction to Literary Study. 3.0 Credits.
This course serves as an introduction to the basic methods of and critical approaches to the study of literature. Some sections may have further individual topic descriptions; please check in SIS when searching for courses.
Instructor(s): E. Sundquist; J. Hickman; J. Jackson
Area: Humanities
Writing Intensive.

AS.060.108. Time Travel. 3.0 Credits.
Why is time travel such a consistent and perplexing theme in literature and film over the last 150 years? Why is modernity so concerned with peeking backwards or forwards? This course will examine the history of time-travel fiction, from its beginning in utopian fiction through its box-office dominance in the 1980s, and into today. Writers will likely include Mark Twain, Edward Bellamy, Harold Steele Mackay, Ray Bradbury, Robert Heinlein, and Philip K. Dick. Movies will include *The Terminator*, *Back to the Future*, and *Primer*.
Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.

AS.060.111. How Not to Be Afraid of Poetry. 3.0 Credits.
What is poetry? And why don’t we like it? This course will explore what makes poetry turn ordinary language into something extraordinary, into shapes and sounds so that sometimes we find it difficult to understand and sometimes we find it great delight. This seminar will open up a range of poetry written in English, including some of the greatest writers of the English language. This course is designed for the students without a strong background in reading poetry but who have the desire to gain it; the main emphasis is exploration of the world and words of poetry and developing an appreciation and analytical understanding of the ways poetry can express, advocate, record, and move. Assignments will include reading poems, becoming an expert about a single poet, attending public poetry readings, creating poems, and writing short weekly assignments about poems. You will be expected to be an active member in classroom discussion and activities. Pre 1800 course.
Instructor(s): S. Achinstein
Area: Humanities
Writing Intensive.

AS.060.112. Major Authors: Dickens and Film. 3.0 Credits.
From the earliest moments of cinema, Charles Dickens’ writing has proven extraordinarily stimulating for film-makers. Why might this be? What does it tell us about Dickens—and what does it tell us about the pleasures and demands of both fiction and film? To address these complex questions we’ll read a handful of Dickens’ works (most likely Oliver Twist, Great Expectations, Christmas Carol and Little Dorrit), watch their adaptations, and read a small set of critical essays. Requirements are likely to include two papers, response papers, and a class presentation.
Instructor(s): A. Miller
Area: Humanities

AS.060.113. Expository Writing. 3.0 Credits.
“Expos” is designed to introduce more confident student writers to the elements of academic argument. Students learn to apply “The Fundamental Structure of Academic Argument” in academic essays of their own. Classes are capped at 15 students and organized around three major essay assignments. Each course guides students’ practice through pre-writing, drafting, and revising, and includes discussions, workshops, and tutorials with the instructor. In addition to its central focus on the elements of academic argument, each “Expos” course teaches students to document sources correctly and provides its own topic or theme to engage students’ writing and thinking. Please see the following list of individual course descriptions to decide which sections of “Expos” will most interest you. “Expos” courses are available to freshmen, sophomores, and juniors, and to seniors by special permission.
Instructor(s): Staff
Area: Humanities
Writing Intensive.
AS.060.114. Expository Writing. 3.0 Credits.

“Expos” is designed to introduce more confident student writers to the elements of academic argument. Students learn to apply the paradigm of academic argument in academic essays of their own. Classes are capped at 15 students and organized around four major writing assignments. Each course guides students’ practice through pre-writing, drafting, and revising, and includes discussions, workshops, and tutorials with the instructor. In addition to its central focus on the elements of academic argument, each “Expos” course teaches students to document sources correctly and provides its own topic or theme to engage students’ writing and thinking. Please see the Expository Writing Program’s website for individual course descriptions to decide which sections of “Expos” will most interest you. “Expos” courses are available to freshmen, sophomores, and juniors, and to seniors by special permission from the English Department.

Instructor(s): Staff
Area: Humanities
Writing Intensive.

AS.060.116. Reading Muslims in Global Fiction and Film. 3.0 Credits.

This course will explore representations of complex, fully-developed Muslim characters in fictions detailing experiences from the Balkans, the Indian Ocean, Britain, and the United States. These may include novels by Abdulrazak Gurnah, Orhan Pamuk, and Leila Aboulela, as well as films like A Separation (2011). In studying the way each text represents Muslims and their relationships to their faith, the class will analyze themes of belonging and identity politics, imagined relationships to geographies, and representations of individuality alongside rituals of belief. It will look at how race, socio-economic status, gender, and citizenship contribute to these representations, when and how these texts are read as political acts, and what contributions such fiction has made to aesthetics.

Instructor(s): N. Hashem
Area: Humanities
Writing Intensive.

AS.060.120. The Novel, the Sea, and the Geopolitical Sublime. 3.0 Credits.

What happens when the novel goes to sea? This course investigates how novels engage with the problem of knowledge posed by empire, both for writers from within the imperial metropolis trying to imagine the totality of the geopolitical world, and for writers who “write back” to the imperial center by using their regional literary traditions to bend novelistic conventions. Our inquiry has two parts: We will first consider how new conventions and techniques of novel-writing emerge when novelists try leaving the certainties of their national and regional boundaries to enter the confusion of uncharted territories; we will then move to postcolonial novels and consider how these write against the notion that their regions are chaotic and un decipherable, while at the same time using that very notion to claim epistemic power.

Instructor(s): S. Kazmi
Area: Humanities.

AS.060.122. Hollywood and the Culture Industry. 3.0 Credits.

For an average consumer in the first half of the twentieth century, American culture meant Hollywood, and “Hollywood” was something of an insult. Associated with mass produced spectacles of questionable artistic value, the American movie industry played a powerful role in defining “popular culture” as we understand it today. This course will examine how Hollywood contributed to the popularization of cultural production and consumption, and how Hollywood itself was constructed as a cultural icon. What are the myths and tropes that govern Hollywood? How does Hollywood transmit economic, social, national, gender, and racial ideologies? How did Hollywood, in the face of corporate hegemony, still manage to create some of the most enduring cultural artifacts of the twentieth century? The course will begin with readings by Nathanael West and F. Scott Fitzgerald, two authors who worked as screenwriters to support their aspirations as novelists. We will then turn to the crucial influence made by non-American writers on Hollywood, starting with Evelyn Waugh’s "The Loved One" about the “British Colony” Waugh discovered during a visit to Southern California. Two weeks will be spent on Frankfurt School theorists of popular culture Theodor Adorno and Max Horkheimer, and the final third of the course will focus on films. We will start by examining three filmmakers whose careers were defined by the “studio system,” the oligopoly that controlled American cinema during the so-called “classical era.” The course concludes with two weeks devoted to films about Hollywood by notable directors. Classes will be supplemented by relevant secondary scholarship.

Instructor(s): J. Hoffmann
Area: Humanities.

AS.060.123. Freshman Seminar: Prophecy After Science. 3.0 Credits.

This course explores the history of prophecy from ancient Greek and Judaic sources to current intimations of technological singularity and ecological doom. We will focus on the influence of prophecy on the rise of science (and vice-versa). Readings will include texts by William Shakespeare, Francis Bacon, Mary Shelley, and Philip K. Dick.

Instructor(s): W. Miller
Area: Humanities
Writing Intensive.

AS.060.124. Politics, History and Autobiography. 3.0 Credits.

Students will write a mini-autobiography in the form of seven 3000 word essays, work shopped in class. Readings include A Small Place by Jamaica Kincaid and Brothers and Keepers by John Edgar Wideman.

Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

AS.060.126. Feminist Fiction: Fundamentals. 3.0 Credits.

Instructor(s): M. Favret
Area: Humanities.
AS.060.127. **Muslim Science Fiction. 3.0 Credits.**
This course will explore the wondrous and mysterious world of Islamic Sci-Fi. Writers of Muslim Sci-Fi have asserted a long tradition of speculative fiction and fantasy dating back to the 13th century. We will look into this literary history, beginning with earlier texts like The Arabian Nights, al-Qizwini's alien story Awaj bin Anfaq and Roquia Hussain's Sultana's Dream all the way through to modern texts like G. Willow Wilson's Alif the Unseen and Saladin Ahmed's Throne of the Crescent Moon. We will ask how this genre, as opposed to realism, might enable these writers to productively tackle themes of history, science, belief, and the politics of belonging and difference. We will pair our Muslim readings with more canonical science fiction works, such as Mary Shelley's Frankenstein, H.G. Wells' The Time Machine, and more recently, Kazuo Ishiguro's Never Let Me Go, to think through the relationship of the SF writer to a particular cultural moment. We will also look at writers of Afrofuturism and magical realism, like Octavia Butler and Gabriel García Márquez, to think about how other writers of color have employed fantasy and the fantastical, and to what ends.
Instructor(s): N. Hashem
Area: Humanities
Writing Intensive.

AS.060.129. **Writing Africa Now. 3.0 Credits.**
This course surveys post-2000 literary and cultural production from sub-Saharan Africa. Topics will include debates over genre and fiction's relevance to African experience, legacies of canonical writing about independence, urban Africa as violent or "tragic" landscape, and problems of scale and geographical context. Readings by authors such as Adichie, Wainaina, Duiker, and Vladislavic, and students will be introduced to the main print and online arteries of African intellectual discussion. This class is for non-majors and does not count towards the English major or minor.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.139. **Expository Writing: The Narrative Essay. 3.0 Credits.**
Telling stories is one of the first and most important ways that human beings try to make sense of the world and their experience of it. The narrative art informs fiction and nonfiction alike, is central to the writing of history, anthropology, crime reports and laboratory reports, sports stories and political documentaries. What happened? The answer may be imagined or factual, but it will almost certainly be narrative. This course focuses on the narrative essay, a nonfiction prose form that answers the question of "what happened" in a variety of contexts and aims to make sense not only of what happened but how and why. We will begin by summarizing narrative essays, will move to analyzing them, and in the second half of the course you will write two narrative essays of your own design. Authors may include James Baldwin, Annie Dillard, Chang Rae Lee, Danielle Ofrì, George Orwell, Richard Rodriguez, Richard Selzer, and Abraham Verghese. You will learn the power of narrative to inform and persuade as you test that power in your own writing.
Instructor(s): P. Kain
Area: Humanities
Writing Intensive.

AS.060.141. **Nineteenth Century Narrative and Early Film. 3.0 Credits.**
This course will situate the birth of the movies within the context of 19th century fiction and visual technology. Filmmakers are likely to include Georges Melies, Sergei Eisenstein, D. W. Griffiths, Charlie Chaplin, Buster Keaton, King Vidor, and Rouben Mamoulian; novelists are likely to include Charles Dickens (Christmas Carol or Oliver Twist), Robert Louis Stevenson (Jekyll' and Hyde), and perhaps Virginia Woolf (Mrs. Dalloway).
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.146. **Detective Fiction. 3.0 Credits.**
This course will look at the history of English-language detective fiction through the nineteenth and twentieth centuries. We will pay special attention to the way clues and suspense operate, the role of the reader in figuring out the mystery, and the complicated relationship of the detective with official authority. Authors will likely include some selection of Wilkie Collins, Edgar Allan Poe, Arthur Conan Doyle, Agatha Christie, Dashiell Hammet, and Raymond Chandler. This class is for non-majors.
Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.

AS.060.149. **Freshman Seminar: Work and Worth in American Literature. 3.0 Credits.**
"No man needs sympathy because he has to work, because he has a burden to carry," Theodore Roosevelt proclaimed in his "Square Deal" speech of 1903. "Far and away the best prize that life offers is the chance to work hard at work worth doing." Hard work is at the heart of the American dream, but with unemployment rates at historic highs and the global economy proceeding at a rapid clip, Roosevelt's words resurrect old questions in a new world: What work is worth doing? Who gets the chance to do it? And what happens when people find themselves doing work that isn't worth doing? In this course we will consider the meaning and consequences of work, from the heroic to the tragic, through a selection of American literature from the last days of slavery to the present. This course will consider work in all its forms, from the plantation to the boardroom, to help us develop the tools to interpret the varieties and values of labor in modern society.
Instructor(s): E. Tempesta
Area: Humanities
Writing Intensive.
AS.060.150. Freshman Seminar: Milton's Paradise Lost: Contexts and Conversation. 3.0 Credits.
This course undertakes an in-depth study of what is arguably the greatest long poem in the English tradition, John Milton’s Paradise Lost. The poem, first published in 1667, is Milton’s take on the Judeo-Christian story of the Fall found in the Bible. Paradise Lost does not merely re-tell the biblical account, however. By expanding three chapters of Genesis into a twelve-book epic meant to rival its classical forbears—most importantly Virgil’s Aeneid—Milton’s poem makes room for new readings of an old story. This course encourages students to find their own new readings of the Genesis story by considering the historical contexts of the poem’s production as well as the conversations Paradise Lost continues to provoke to this day. In addition to reading and discussing the poem, students will become familiar with ongoing sites of critical debate, such as the representations of Satan and of Eve. To help negotiate these conversations, students will complete a guided research project that makes use of the materials available through the library’s Department of Special Collections, housed in Brody Learning Commons. In addition to early editions of Paradise Lost, this treasure trove of rare books offers a wide variety of materials which may deepen an encounter with Milton’s poem, from biblical illustrations to gardening manuals to marriage advice. Students will use the collection to ask questions such as: “How does Milton’s representation of Satan differ from earlier traditions of imagining the devil?” and “Does Milton’s approach to Eve reinforce or revise conventional ideas about women?” Sufficient class time will be dedicated to introducing students to Special Collections so as to facilitate their individual work over the course of the semester.
Instructor(s): R. Buckham
Area: Humanities
Writing Intensive.

AS.060.154. Zombies. 3.0 Credits.
This course, designed for non- and potential majors, aims to develop invaluable critical reading and writing skills by way of a fascinating and fun topic: zombies. Some of the questions we will ask as we learn to interpret and analyze a range of media are: Why does the zombie figure so prominently in modern literature and film? What particular anxieties does this figure of mindless violence disclose? Why does the zombie genre so often lend itself to political allegory? How do we make historical sense of this figure’s original association with Afro-Atlantic religions like Haitian voodoo? Texts may include: Mary Shelley, Frankenstein; William Seabrook, The Magic Island; Zora Neale Hurston, Tell My Horse; White Zombie, dir. Victor Halperin; I Walked With a Zombie, dir. Jacques Tourneur; the George Romero films; Shaun of the Dead, dir. Edgar Wright; Juan of the Dead, dir. Alejandro Brugués; Tony Burgess, Pontypool Changes Everything; Colson Whitehead, Zone One; iZombie, creators Rob Thomas and Diane Ruggiero-Wright.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.

AS.060.155. Expository Writing: Introduction to the Research Paper - Controversies in Adolescence. 3.0 Credits.
"Introduction to the Research Paper" is designed to introduce more experienced student writers to the fundamental skills of the research process. These include asking research questions, evaluating the usefulness of sources to answer them, synthesizing sources, reading sources critically, and developing arguments that deliver an original thesis. Students will work with a research librarian at the Eisenhower Library, with whom they will learn to navigate traditional databases as well as new media sources. The Research Paper is topic-based and divided into three linked units of instruction. The course culminates with a paper of 10-12 pages that draws upon the cumulative skills of the semester. Each course is capped at ten students and available only to those who have taken “Expository Writing” (060.113/114)
Instructor(s): A. Watters
Area: Humanities
Writing Intensive.

AS.060.159. James Joyce's Ulysses. 3.0 Credits.
As a class, we will read James Joyce’s Ulysses in its entirety. Readings will be supplemented with appropriate secondary sources, but the focus will be the novel. No prior knowledge of Joyce is necessary.
Instructor(s): J. Hoffmann
Area: Humanities.

AS.060.164. The Marriage Plot: From Jane Austen to Bridesmaids. 3.0 Credits.
No device has been more essential to the modern novel than that of marriage. In this course we will examine the history of the marriage plot in literature and film, beginning with Jane Austen’s Pride and Prejudice and concluding with the 2011 film Bridesmaids. We will have occasion to inquire into the significance of marriage to the form of the novel as well as the ways in which the marriage plot has been appropriated, adapted, and deconstructed in nineteenth-century novels and contemporary novels alike. This class will also include a digital component as we will all collaborate to create a growing database of tropes common to marriage plots.
Instructor(s): G. Shreve
Area: Humanities.

AS.060.171. Russian Classics & Their Afterlives. 3.0 Credits.
The idea of the “Russian Soul” has long been a source of captivation to English-language writers. How has their imagination of the dense nineteenth-century works for which Russian literature is best known evolved in the era of globalization? This course reads three major Russian novels in tandem with recent works that invoke them: Tolstoy’s Anna Karenina with Nilo Cruz’s 2003 Pulitzer Prize-winning play Anna in the Tropics; Dostoevsky’s Demons with J.M. Coetzee’s 1994 novel Master of Petersburg; and Turgenev’s Fathers and Sons with Tom Stoppard’s 2002 Coast of Utopia trilogy. We will attend both to the aspects of Russian writing that find perennial appeal, and to the nuances of Russian intellectual history that get lost in the clamor to claim it as universal.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.
AS.060.176. The Russian Novel: Tolstoy and Dostoyevsky. 3.0 Credits.
"If there is no God, how can I be a captain?" We'll examine this and other religious, philosophical, and historical questions in Tolstoy's and Dostoyevsky's titanic novels. Readings (in translation) include War and Peace and The Brothers Karamazov. No prerequisites. Substantial reading; 6-8 page paper; 10 page paper; weekly exercises and quizzes. Freshman/sophomore seminar. This class is for non-majors.
Instructor(s): S. Cameron
Area: Humanities
Writing Intensive.

AS.060.201. The Nineteenth Century British Novel. 3.0 Credits.
Reading major novelists from the nineteenth century including Austen, C. Brontë, Dickens, Eliot, Hardy, and Conrad. We will pay attention to formal conventions, and relation to social and historical context.
Instructor(s): J. Rosenthal
Area: Humanities.

AS.060.203. Bible as Literature. 3.0 Credits.
This course looks at the ways in which the Bible has and can be read as literature.
Instructor(s): M. Thompson
Area: Humanities.

AS.060.204. Satan in Literature. 3.0 Credits.
What is it about Satan that has captured the literary imagination? From moral opposition to God in the Book of Job, to divine punishment in Dante's Inferno, from political revolution in Milton's Paradise Lost to irreverence of tradition in Salman Rushdie's The Satanic Verses, this class will examine the ways in which Satan has been used in literature to represent a variety of moral, political and social forces, from Ancient, Medieval, Renaissance and Modern eras.
Instructor(s): J. Chilton
Area: Humanities.

AS.060.205. Feminist Fiction: Violence, Sex and Gender. 3.0 Credits.
This course will start with passages from Lysistrata and the Book of Judges, and have as a running concern the overlapping structures of violence, race and gender. Novels will include the following pairs: Jane Eyre and Wide Sargasso Sea, The Bluest Eye and Bastard Out of Carolina, The Handmaid's Tale and Octavia Butler's novella Bloodchild.
Instructor(s): M. Favret
Area: Humanities.

AS.060.206. Friends and Enemies in Jane Austen. 3.0 Credits.
Jane Austen's novels are often treated as forms of escape from our complicated world to a simpler, more rational time. Arguably, however, her novels originally helped readers navigate profound social problems, particularly the difficulty of knowing friends from enemies. In this course, we will consider depictions of friendship and enmity in four of Austen's major novels. We will compare these novels to four recent films inspired by her works.
Instructor(s): W. Miller
Area: Humanities
Writing Intensive.

AS.060.207. Shakespeare. 3.0 Credits.
Reading the major comedies, histories and tragedies alongside the narrative poem "Venus and Adonis" and the sonnets, this survey course considers Shakespeare's hybrid career as poet and playwright. Pre 1800 course.
Instructor(s): A. Daniel
Area: Humanities.

AS.060.208. British Literature I. 3.0 Credits.
British Literature I is a survey of English writing on the isle of Britain from the seventh to the seventeenth centuries. It traces the formal experimentation in poetry and prose, and in narrative, lyric, and drama, through which that writing eventually became pre-eminent in Britain. It will also attend to the social and cultural circumstances—in the court, in church, and in the evolving public and private spheres—that shaped the many genres that emerged in this rich 1000 years and developed a definition of 'literature' itself. Author's read include Chaucer, Langland, Kempe, Spenser, Shakespeare, Lanyer, Donne Herbert, Marvel, and Milton. Through lectures, class discussion, written responses, and longer essay assignments, students will master the fundamentals of English literary history as well as the techniques of critical reading and writing.
Instructor(s): C. Cannon
Area: Humanities.

AS.060.209. The Literary History of the Devil to 1800. 3.0 Credits.
This course reads major works in European literature before 1800 (give or take) depicting the devil. It examines the history of the various social, cultural and political guises under which the devil appears, and the function that representing radical evil performs, in literature and society. Among our readings will be Dante's Inferno; Milton's Paradise Lost; Goethe's Faust, Part One, and many other major Satanic works.
Instructor(s): M. Thompson
Area: Humanities.

This course provides a framework for grasping the dazzling variety and explosive innovation of literature in English during the last quarter-millennium. Attending both to textual details and to historical contexts, we will see how Wordsworth, Austen, Keats, Tennyson, Dickens, Wilde, Woolf, Rushdie, and other writers extend and undo tradition, illuminate their times and places as well as our own, and conspire to bring to us the intense experience distinctive to great literary art.
Instructor(s): D. Mao
Area: Humanities.

AS.060.213. The Novel and Globalization. 3.0 Credits.
Novels have long been classified by the national origin of their author, and, for the most part, the great works of the nineteenth and twentieth centuries take place primarily in one country. In the postcolonial era of the 1980s and 90s, many prominent writers explored the process of diasporic movement from one country to another. Recently, though, there has been a lot of talk about a new kind of "rootless" novel that jumps between many locales around the globe. This course reads some of the prime examples of this genre in relation to its immigrant predecessors, identifying its key formal and thematic attributes (such as perspectival and geographical range, multi-stranded plots, and an acute consciousness of linguistic and generic hybridization). We will discuss the trade-offs inherent in developing many places rather than one in terms of style and character development, as well as the political and even ethical implications of abandoning the concept of "home." Primary works by Abdulrazak Gurnah, Caryl Phillips, David Mitchell, Taiye Selasi, Chimamanda Adichie, and Imraan Coovadia.
Instructor(s): J. Jackson
Area: Humanities.
AS.060.214. Jane Austen. 3.0 Credits.
An in-depth study of Austen's writing, from her juvenilia through her posthumously published novels, with an occasional glance to movie adaptations. The course will focus on persistent questions about Austen's relationship to feminism, and issues of gender and sexuality, as well as issues of style and technique.
Instructor(s): M. Favret
Area: Humanities.

AS.060.219. American Literature to 1865. 3.0 Credits.
A survey course of American literature from contact to the Civil War.
Instructor(s): J. Hickman
Area: Humanities.

AS.060.222. American Literature, 1865 to today. 3.0 Credits.
This course is a survey of major developments in American poetry and narrative fiction from the end of the Civil War to the present day. Authors to be covered may include Mark Twain, Willa Cather, Henry James, James Baldwin, Toni Morrison, Emily Dickinson, Walt Whitman, Wallace Stevens, and John Ashbery.
Instructor(s): C. Nealon
Area: Humanities.

AS.060.223. African American Literature from 1900 to Present. 3.0 Credits.
A survey of the major and minor texts written by African Americans during the twentieth century, beginning with Charles Chesnutt's The Marrow of Tradition and concluding with Toni Morrison's Beloved.
Instructor(s): L. Jackson
Area: Humanities.

AS.060.229. The Antihero: Heathcliff to Walter White. 3.0 Credits.
Although it's common to think of literature a source of ethical wisdom, literary history is actually full of proud, often cynical, figures who lack respect for conventional norms and compel attention by their sheer force of will. This course constructs an abbreviated history of the anti-hero by exploring works of art that both privilege and criticize anti-heroic villains—including Heathcliff (from Wuthering Heights), Mr. Hyde (from Dr. Jekyll and Mr. Hyde), and Walter White (from Breaking Bad).
Instructor(s): M. Flaherty
Area: Humanities.

AS.060.231. Novels Into Film. 3.0 Credits.
What does it take to turn a novel into film? How different are the demands and possibilities of these two forms? Why do some novels repeatedly attract filmmakers? And how should we evaluate films that adapt novels? Beginning with the novel Frankenstein and its various film progeny, we will look at a series of pairings between novels and films. These may include Austen's Pride and Prejudice, Dickens' Great Expectations, Tarkington's The Magnificent Ambersons, Stoker's Dracula and McEwan's Atonement along with various critical readings about the genre of the novel and the medium of film.
Instructor(s): M. Favret
Area: Humanities.

AS.060.255. The Bible as Literature. 3.0 Credits.
This course looks at the Bible's influence on literature by examining the use and impact of the most common biblical stories on canonical literary works. Pre 1800 Course.
Instructor(s): M. Thompson
Area: Humanities.

AS.060.262. Literature and Knowledge. 3.0 Credits.
Can poems, plays, and imaginary narratives teach us something about the real world? Or does their fictional status make them unreliable as sources of knowledge? This course explores these questions by examining classical and contemporary discussions of the topic in conjunction with major works of literature. Primary sources include works by Shakespeare, Jane Austen, and William Golding, while the criticism will be represented among others by Aristotle, Dr. Johnson, and Martha Nussbaum.
Instructor(s): R. Maioli dos Santos
Area: Humanities.

AS.060.265. Nineteenth Century British Novel. 3.0 Credits.
Reading major novelists from the nineteenth century including Austen, C. Brontë, Dickens, Eliot, Hardy, and Conrad. We will pay attention to formal conventions, and relation to social and historical context.
Instructor(s): J. Rosenthal
Area: Humanities.

AS.060.301. Literary Theory. 3.0 Credits.
This course serves as an introduction to a wide range of critical approaches to literature through various canonical theoretical studies of the Book of Genesis.
Instructor(s): M. Thompson
Area: Humanities
Writing Intensive.

AS.060.302. Theology of the Narrative. 3.0 Credits.
"Everything happens for a reason." "I guess it wasn't meant to be." People often impose a narrative logic on life events by reference—however attenuated—to a transcendent order of meaning. This course asks two basic questions: How do theological concepts such as God's omniscience, Providence, predestination, and prophecy get translated into particular narrative structures? How does narrative experimentation function as a critique of traditional theological viewpoints, particularly around the question of how divine agency is related to the existence of evil? Course texts may include: The Book of Job, Denis Diderot, Jacques the Fatalist; Oladah Equiano, Interesting Narrative; Herman Melville, Moby-Dick; James Agee and Walker Evans, Let Us Now Praise Famous Men; James Baldwin, Go Tell It on the Mountain; Marilynne Robinson, Gilead and Home; Scarlett Thomas, Our Tragic Universe; Terrence Malick, dir., The Tree of Life.
Prerequisites: AS.060.107 Intro to Literary Study, English Lecture Course, or Instructor approval.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.

AS.060.304. Large Novels. 3.0 Credits.
This course will look at novels that are not only large in size, but which also think about the meaning and methods of trying to capture huge segments of the world into a piece of art. How much can be fit into a novel? What is gained and what is lost? How large is too large? We will read Charles Dickens's Bleak House, Lev Tolstoy's War and Peace, and Herman Melville's Moby Dick.
Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.
AS.060.305. Sir Philip Sidney. 3.0 Credits.
Courtier, theorist, diplomat, soldier, and martyr, Sir Philip Sidney exemplified but also changed the cultural ideals of his Elizabethan moment. Hoping to evaluate Sidney's extravagant claim that "the poet, lifted up with the vigor of his own invention doth grow, in effect, into another nature", this course reads Sir Philip Sidney's innovations across a range of genres: literary theory ("An Apology for Poetry"), poetry ("Astrophel and Stella"), scriptural translation ("The Sidney Psalms") and prose romance ("The Countess of Pembroke's Arcadia"). The course concludes with an examination of his many afterlives as exemplary subject for biography, adaptation, homage and critical argument.
Instructor(s): A. Daniel
Area: Humanities
Writing Intensive.

AS.060.306. The Historical Novel. 3.0 Credits.
We're in the middle of dramatic social, technological and political change: how are we to understand it? This course will address this question by studying the historical novel. We're likely to start by reading Scott's Waverley and end with contemporary fiction. Throughout our focus will not be on particular historical facts or events but on the idea of history itself, the role of institutions and individuals within it, and the powers and limits of literary narrative.
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.307. Training Writing Consln. 1.0 Credit.
A one credit course for those undergrads who have been nominated as Writing Center tutors. Permission required.
Instructor(s): A. Sheeran
Area: Humanities
Writing Intensive.

AS.060.313. Edmund Spenser. 3.0 Credits.
After a diagnostic introduction to his early poetry, this reading intensive seminar will concentrate upon Edmund Spenser's masterpiece, The Faerie Queene (1590/1596), which we will read in its entirety. Over the course of its sprawling Six Books and its concluding Mutability Cantos, The Faerie Queene marshals an enormous cast of characters (knights, ladies, magicians, giants, monsters) in order to allegorically represent the virtues of Holiness, Temperance, Chastity, Friendship, Justice and Courtesy. Through this framework, his text models the ethical regulation of the body, the aesthetic construction of gender, the politics of national myth-making, and the ongoing processes of colonial violence in which Spenser was himself complicit. But across its vast yet incomplete expanse, Spenser's text is always centrally concerned with the task of reading. Accordingly, students should emerge from their encounter with this demanding but rewarding poem with a deeper understanding of the task of interpretation itself. As a group we will collectively traverse the surface of the text, and work together to construct a functional account of allegory's effects. You will be asked to respond to the challenge of Spenser's work in class discussion, weekly short responses, and three analytic papers.
Instructor(s): A. Daniel
Area: Humanities
Writing Intensive.

AS.060.314. Social Media Fictions. 3.0 Credits.
Writers around the world are now searching for ways to incorporate new modes of social interaction - e.g. Facebook, Twitter, text messaging, and Skype - into their print work. This course explores the various techniques they have adopted for this purpose, with an eye to critically evaluating their implications for narrative structure and its "reality effect." From Teju Cole's very public experiments with the Twitter novel to a Zimbabwean writer's attempt to capture plot turns through SMS, we will discuss the ways in which narrative is helped or hindered by the ubiquity of social media. Writers studied will include Tendai Huchu, Zadie Smith, Jonathan Franzen, and Eben Venter.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.315. Poetry by Other Means. 3.0 Credits.
In this course, we explore the makings of a new genre: the poet's novel. Reaching back to the modernist works of Gertrude Stein and Djuna Barnes to look for its resources and its models, searching for antecedents in the queer avant-gardes of the 1970s, and finally delving into the key poets' novels of just the last five or ten years—including works written by Eileen Myles, Juliana Spahr, Ben Lerner, and Bhanu Kapil—we will collectively develop an account of its yet-uncharted territory and some of its attractions. Our work will open onto a series of questions about both the category of poetry and the significance of narrative, while following thematic threads of friendship, gender and sexuality, self-reflection, feeling, crisis, and utopia. Deans Teaching Fellowship course.
Instructor(s): C. Westcott
Area: Humanities
Writing Intensive.

AS.060.316. Mapping the Global Metropolis. 3.0 Credits.
Cities have long taken on a central role in literature, but much of our reading about urban space is confined to a few Western hubs. And while the city has traditionally been a space for fictional characters to develop into national subjects, much of the most innovative contemporary writing sees the city as a character of its own. This course will address the representational challenges of globalization through fiction and genre-bending memoir about contemporary metropolises that act as its microcosm: Johannesburg, Lagos, Delhi, London, and New York. We will read primary works by Ivan Vladislavic, Chris Abani, Aravind Adiga, Zadie Smith, and Teju Cole, as well as supplementary excerpts from books including Capital, by Rana Dasgupta, Mike Davis' Planet of Slums, Ato Quayson's Oxford Street, Accra, and Loren Kruger's Imagining the Edgy City. Finally, the course will include theoretical readings about globalization and representation, such as Fredric Jameson's essay on "Cognitive Mapping" and Arjun Appadurai's seminal book Modernity at Large.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.
AS.060.318. Contemporary Literature and Climate Change. 3.0 Credits.
In this course we will study the ways literary texts have imagined and addressed climate change, from the turn of the 20th century until today. We will primarily focus on novels, but I will provide non-fictional background reading on the history of how we’ve conceptualized “climate,” and we will also read some poetry. We’ll think a lot about genre: how does climate change look in realist fiction? Science fiction? Poetry? Is apocalypse the only framework in which to view it? How do race, gender, class and geopolitics alter writers’ views on climate? Texts will include HG Wells, The Time Machine; Kim Stanley Robinson, New York 2140; Octavia Butler, Parable of The Sower; Emily St. John Mandel, Station Eleven; Brenda Hillman, Seasonal Works with Letters on Fire; and Allison Cobb, After We All Died. We’ll also draw on the Yale University Press anthology of climate writing, The Future of Nature.
Instructor(s): C. Nealon
Area: Humanities
Writing Intensive.

AS.060.319. Values and Gender in Nineteenth-Century British Literature. 3.0 Credits.
The course considers how nineteenth-century British authors—including Ruskin, Gaskell, Eliot, and Wilde—engage and oppose various sets of values in their representations of gender.
Instructor(s): M. Flaherty
Area: Humanities
Writing Intensive.

AS.060.320. Icons of Feminism. 3.0 Credits.
This course looks at four crucial figures who have haunted feminist thought and responses to feminism over the centuries. Sappho, known as the first female poet, remains an enigmatic icon of feminine desire and creativity; Antigone, the daughter of Oedipus and the heroine of Sophocles’s play Antigone, still inspires feminist analyses of women’s relationship to law, the state and civil society; and Joan of Arc, the militant maid of Orleans, troubles thinking about women and violence as well as women, religion and spirituality. The last figure is Mary Wollstonecraft, often cited as the first modern feminist. The course will examine literary works written about these iconic figures, as well as contemporary feminist writing about their influence and viability as models for the future of feminism.
Instructor(s): M. Favret
Area: Humanities
Writing Intensive.

AS.060.322. Indian Ocean. 3.0 Credits.
This course will explore the development of a cosmopolitan ethos in postwar fiction from the Indian Ocean region, with particular focus on South Africa, South Asia, and the Malay Archipelago. Authors will include Aravind Adiga, Pramoedya Ananta Toer, Lloyd Fernando, Tan Twan Eng, and J.M. Coetzee.
Instructor(s): J. Haley
Area: Humanities
Writing Intensive.

AS.060.324. Modern Literature and the Land. 3.0 Credits.
This course will examine literary representations of ecological change and environmental crisis. As a class, we will read four novels written in the early twentieth century, a period of unprecedented technological development. Needless to say, environmental upheaval was not unique to the modern period. Earlier writers marveled at the railroad’s influence on the landscape, while Victorian novelists grappled with the baleful ecological consequences of industrializing cities. Nevertheless there are key differences with the authors examined in this course: D.H. Lawrence, William Faulkner, Zora Neale Hurston, and Claude McKay. Whereas railroads united countries, and factories reorganized cities, the disruptions of the early twentieth century affected the entire planet. The telegraph and telephone, steam ships and airplanes knitted nations into a global network. In response, writers worked to register the local effects of these global events, translating planetary change into concrete examples of people adapting to a transforming landscape. In this course, we will reflect on the specific ways that humans influence the environment—how people bend the land to their will in light of specific historical conditions—and more important, how nature responds to those forces.
Dean’s Teaching Fellowship Course.
Instructor(s): J. Hoffmann
Area: Humanities
Writing Intensive.

AS.060.325. George Eliot. 3.0 Credits.
In this course we will read the major novels (and some essays) by George Eliot, one of the most intellectually engaging of British novelists. Her fiction explores ethical, social, and aesthetic issues concerning sexual politics, the limits of morality, the demands of family, the desperation of skepticism, and the capacities of the novel form. Students should leave the course with a heightened sense of the powers of the novel and the seriousness of its ambitions. Texts are likely to include Adam Bede and The Mill on the Floss, but our focus will be on her two last and most ambitious novels, Middlemarch and Daniel Deronda.
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.326. Shakespeare: The Novel. 3.0 Credits.
What if King Lear had been a mother? What if the we thought about Othello through the lens of the holocaust? What if the indigene Caliban was the hero, not the villain? What if Miranda chose Caliban over her European suitor? (The Tempest) Could a modern-day Kate be tricked into marriage and “tamed” (The Taming of the Shrew)? When contemporary novelists rewrite Shakespeare, they pose questions left hanging in the play and bring the plays into our own world. In this course, we will read Shakespeare plays (King Lear, The Tempest, The Taming of the Shrew, Merchant of Venice) along with contemporary novelists that rewrite — and confront — those plays (Jane Smiley, Caryl Phillips, J. M. Coetzee, Anne Tyler). Students will take up important literary questions about kinds of literature (plays vs novels), the canon, imitation, adaptation, and also address the themes of power, gender and sexuality, family dynamics, authority, colonization and the environment.
Instructor(s): S. Achinstein
Area: Humanities
Writing Intensive.
AS.060.330. Literature and the Environment: 1500-1700. 3.0 Credits.
This is an introduction to study of literature and the environment with a focus on early modern literature. During the period 1500-1700, the ground was laid for a modern understanding of the relationship between humans and their environment, and we will explore how literature shaped that relationship. Topics and authors may include: Nature v. Nurture (Sidney, Spenser, Shakespeare); Environmental genres (pastoral, georgic, creation stories); Nature v. Civilization (Montaigne, Bacon, Milton); Climate, Extreme Weather, the Little Ice Age (The Tempest, Dekker, Heywood’s Play of the weather); Land management, gardens, forestry, rivers (Marvell, Denham, Herrick, Jonson, Lanyer); Health and plague (Nashe, Defoe, Dekker); Country v. City (Philips). We will take up current discussions in ecocriticism, and students should be ready to engage with some critical reading and theory.
Instructor(s): S. Achinstein
Area: Humanities
Writing Intensive.

AS.060.332. Jewish American Fiction. 3.0 Credits.
This course will consider the development of Jewish American fiction over the past century through an examination of major authors and topics, with particular attention to novels whose historical trajectories reach geographically back and forth from America to Europe, and temporally back and forth across the Holocaust, the century’s defining event. These novels thus frequently have multiple settings and treat familial, communal, and intellectual life, along with topics such as emigration, anti-Semitism, and religious belief, over a span of several generations. The list includes authors whose works first appeared in Yiddish (Lamed Shapiro and Isaac Bashevis Singer) and authors whose sensibilities are decidedly American, but all write with attention to the tenuous assimilation, dislocation, trauma, and linguistic complexity that often marked twentieth-century Jewish life, no less in the United States at times than in Europe. Works studied will include: Dara Horn, In the Image; Rebecca Goldstein, Mazel; Bernard Malamud, The Fixer; Lamed Shapiro, The Cross and Other Jewish Stories; Isaac Bashevis Singer, Shosha; Cynthia Ozick, The Shawl; Nicole Krauss, A History of Love; Jerzy Kosinski, Steps; Philip Roth, Nemesis; Shalom Auslander, Hope: A Tragedy: A Novel
Instructor(s): E. Sundquist
Area: Humanities
Writing Intensive.

AS.060.333. God on Trial. 3.0 Credits.
This course traces an illustrious literary tradition, spanning centuries, that dramatizes the subjection of a deity to a human legal inquiry. We will especially attend to how and with what implications massive theological and philosophical questions such as the existence and nature of the divine and the meaning of and proper ethical response to suffering are worked out through this very specific representational gambit. Texts may include: The Book of Job; Voltaire, Candide; Herman Melville, Moby-Dick; Fyodor Dostoevsky, The Brothers Karamazov; Rebecca Harding Davis, Life in the Iron-Mills; Elie Wiesel, The Trial of God; Tony Kushner, Angels in America; Margaret Atwood, The Handmaid’s Tale; James Morrow, Blameless in Abaddon; OMG: Oh My God! dir. Umesh Shukla; graphic novelists Jonathan Hickman et al., God is Dead.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.

AS.060.335. Black Satire. 3.0 Credits.
In this course, we will explore the use of satire in black literary and artistic traditions. Reading will likely include poems and novels by Paul Laurence Dunbar, George S. Schuyler, Claude McKay, William Melvin Kelly, Ishmael Reed, Fran Ross, Percival Everett, and others. In addition, we will venture into the genres of film (“Get Out”) and visual art (work by Glenn Ligon and Kara Walker, the latter currently on exhibit at the BMA). The politics of satire emerge in these texts particularly through the treatment of racial uplift and respectability ideologies, race relations, the legacies and histories of slavery, visions of utopia and dystopia, and the concept of the “post-racial.” With attention to the historical and cultural conditions under which these works were produced, we will address the ways in which satire can (or cannot) effect change in the world.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.

AS.060.336. Victorian Modernity. 3.0 Credits.
This course will cover literature produced within major and minor literary traditions. Reading will likely include poems and novels by John Keats, Samuel Taylor Coleridge, Robert Browning, Tennyson, Emily Bronte, Christina Rosetti, Hopkins, and Hardy.
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.337. James Joyce. 3.0 Credits.
A seminar covering the oeuvre of James Joyce, including but not limited to Dubliners, A Portrait of the Artist as a Young Man, Ulysses, and parts of Finnegans Wake. Selected readings in other writers and in relevant historiography; some attention to Joyce criticism.
Instructor(s): D. Mao
Area: Humanities
Writing Intensive.

AS.060.338. Literary Scenes. 3.0 Credits.
From Paris in the 1920s to San Francisco in the 1960s and beyond, this course will cover literature produced within major and minor literary “scenes” of the 20th Century. Authors include Hemingway, Stein, Woolf, Ginsberg, Kerouac, and others. Dean’s Teaching Fellowship course.
Instructor(s): A. Zecca
Area: Humanities
Writing Intensive.

AS.060.339. Lunatics, Lovers, Poets: Obsessive Minds in Romantic and Victorian Verse. 3.0 Credits.
Focusing on the long nineteenth century, we will examine how major Anglo-American poets treat the complex relationship between madness, passion, and genius. Additional readings in philosophy and psychoanalysis. Dean’s Teaching Fellowship course.
Instructor(s): J. Hann
Area: Humanities
Writing Intensive.
AS.060.340. The Literature of Atlantic Slavery. 3.0 Credits.
This seminar will trace the historical development of the slavery debate in the Atlantic world through examination of key texts from a host of genres and locations—Quaker religious tracts, political documents like the Haitian Declaration of Independence, Cuban antislavery novels, slave narratives, and “classics” of American literature like Melville’s Benito Cereno. We will consider how the institution of Atlantic slavery was variously represented, justified, and criticized, discovering in the process the deep structures of modern slavery discourse. Texts may include: Aphra Behn, “Oroonoko”; John Woolman’s “Journal”; Robert Wedderburn, “The Horrors of Slavery and Other Writings”; Gertrudis Gomez de Avellaneda, “Sab”; Frederick Douglass, “My Bondage and My Freedom”; Herman Melville, “Benito Cereno”; Harriet Beecher Stowe, “Dred”; Antonio Castro Alves, “The Slaves”.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.

AS.060.341. Milton. 3.0 Credits.
This class will study Milton’s poetry and prose across the whole of his writing career, with special attention to Paradise Lost, the great epic poem retelling the story of the fall of humankind. We will consider Milton’s literary background, his contemporary political and social milieu, as well as critical debates that surrounding the poet, who was accused of being ‘of the devil’s party.’ Pre-1800 course.
Instructor(s): S. Achinstein
Area: Humanities
Writing Intensive.

AS.060.342. Contemporary Novel of Ideas. 3.0 Credits.
The novel of ideas is often traced to 18th century French or 19th century Russian writing, but it has come broadly to signify works of robust philosophical contemplation. The inherently slippery term seems to indicate a work in which “form” is subsidiary to “content,” or at least, in which narrative structures adapt to prioritize thought rather than style, image, or even character. But how, exactly, and about what, do novels “think?” In large part, the novel of ideas is now conflated with a rote and recognizable brand of social realism. This course asks what might qualify as a novel of ideas today, both in terms of the novel’s changing relation to geographical space (and thereby the formal spaces in which philosophy might lurk), and of the particular “ideas” it critiques or puts forth. We will read novelists including J.M. Coetzee, Marlene van Niekerk, Jonathan Franzen, Teju Cole, and Ronan Bennett within a longer literary-philosophical tradition, with reference to works such as Candide, War and Peace, Thus Spoke Zarathustra, and Kierkegaard’s Diary of a Seducer.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.344. The American Renaissance in Technicolor. 3.0 Credits.
"The American Renaissance" refers to the boom in U.S. literary production between the 1830s and the 1860s that gave us the American writers who have achieved the greatest stature in the popular mind—Emerson, Thoreau, Hawthorne, Melville, Whitman. This work was in large part animated by literary nationalism—by the self-conscious effort to produce a distinctively "American" literature that could take its rightful place on the world stage. As such, questions about the meaning of American history and the nature of American identity were central to this work both as implicit impetus and explicit theme. Importantly, these questions were being asked during the heyday of "Manifest Destiny"—of Euro-American westward expansion, which displaced Native peoples and Hispanic settlers and perpetuated the enslavement of African Americans. The goal of this course is to read some of the major works of the period’s canonical Euro-American male writers in conjunction with works by African, Native, Latino, and female American writers in order to gain a fuller picture of literary and cultural history during this formative moment. Texts may include: Ralph Waldo Emerson's essays and antislavery lectures; the anonymous historical romance of the Aztec conquest, Xicotencatl; William Apess, A Son of the Forest, "Eulogy on King Philip"; Frederick Douglass, My Bondage and My Freedom; Henry David Thoreau, Walden, "Slavery in Massachusetts;" "Plea for Captain John Brown"; Harriet Beecher Stowe, Uncle Tom's Cabin; Herman Melville, "Hawthorne and His Mosses," Benito Cereno, Moby-Dick; Nathaniel Hawthorne, tales and sketches, The Blithedale Romance; Walt Whitman, Leaves of Grass (1855 edition).
Prerequisites: AS.060.107 or English department lecture, or instructor permission.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.
AS.060.346. The American Romance. 3.0 Credits.

Reviewers in the nineteenth century noted that narrative fiction on either side of the Atlantic seemed to be moving in different directions—the social-realist panoramas of Charles Dickens and George Eliot were confronted by the metaphysical puzzle-boxes, allegorical curios, and sentimental interfaces of Edgar Allan Poe, Nathaniel Hawthorne, Herman Melville, Lydia Maria Child, and Harriet Beecher Stowe. In the period, this divergence was often characterized by reference to a generic or modal distinction between the novel—the very name of which advertised its modernity—and the romance, which was associated with medieval literary traditions. British novelists sensibly confined themselves to representing and anatomizing that which was probable in contemporary social reality, whereas American romancers insisted on violating verisimilitude via flights of fancy (e.g., deathless black cats and white whales), whether out of political activism, aestheticist indulgence, or esoteric exploration. The twofold objective of this course is, first and foremost, simply to engross ourselves with a series of compellingly weird narrative fictions by American writers that self-identify as—and self-consciously theorize—modern romance—a reward in itself; and, second, to trace the history of the romance/novel distinction from early nineteenth-century reviews to contemporary criticism, discovering in the process the cultural work this distinction—and its elision—has been made to do. Primary texts may include: Lydia Maria Child, Hobomok; Catharine Maria Sedgwick, Hope Leslie; Edgar Allan Poe, tales, Narrative of Arthur Gordon Pym; Nathaniel Hawthorne, tales, The House of Seven Gables, The Blithedale Romance; Herman Melville, Mardi; Harriet Beecher Stowe, The Minister’s Wooing.

Prerequisites: Pre-req: AS.060.107 or permission of the instructor.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.

AS.060.348. Virginia Woolf and Bloomsbury. 3.0 Credits.

An exploration of the achievements and investments of one of the most influential coteries in the history of Britain. In addition to delving into key fictions by Virginia Woolf, we will examine novels by Leonard Woolf and E. M. Forster, art criticism by Roger Fry and Clive Bell, biographical essays by Lytton Strachey, economic writings by John Maynard Keynes, and poetry by T. S. Eliot.

Instructor(s): D. Mao
Area: Humanities
Writing Intensive.

AS.060.349. Clint Eastwood, Race, and the American Western. 3.0 Credits.

Drawing from the body of work reflecting the Hollywood gunfighter and outlaw folk-hero Clint Eastwood, the course will investigate American cinematic representations of slavery (and more specifically its absence), the Civil War and racial formation along the United States’ southwestern frontier in films produced from the 1950s through the contemporary period. A focus on the cultural icon Clint Eastwood enables a close examination of American cinematic fantasies of the frontier, frontier violence and the desire to escape or erase the tensions of race and slavery that have deeply permeated the American cultural consciousness, particularly the creation of American masculine ideals. The course will also take decided note of the national shift from liberal “Great Society Programs” of the 1960s to the conservative “neoliberal” social and cultural ideals in the 1980s and 1990s. Our purpose is to consider the organization and reformation of hegemonic power by way of the complex morality play the western film evokes, typically considering the interstitial geographies between civilization and savagery, belonging and alienation, and metropolitan and colonial outpost. We will privilege in our discussions the contested frontiers of racial dominion. The curriculum is complicated by several significant points of departure from the traditional category of the Hollywood-based American western: a film to frame the question of colonialism and resistance, as well as examples of black cinematic efforts re-drawing boundaries of the racial frontier. (Are they formed at the Caribbean, the easternmost littoral? The postindustrial city? Do they correspond to the romance of organized crime and its fantasy of empire?)

Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

AS.060.351. Theory of the Novel. 3.0 Credits.

We all know a novel when we see one, but it’s surprisingly hard to say just what one is. This seminar will introduce the theory of the novel by reading a number of novels along with the works of central thinkers about the novel. We will look at the connection of the rise of the novel form with historical and cultural changes and investigate key stylistic elements. Novelist will likely include Miguel de Cervantes, Johann Wolfgang von Goethe, Jane Austen, Gustave Flaubert, and Virginia Woolf.

Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.
AS.060.352. John Keats’ Guide to City Living. 3.0 Credits.
This course will take John Keats’ poems and letter as a guide to London in the 1810’s; from the anatomy theaters of the hospitals where he trained, to the raucous parties and poetry slams of his radical literary friends; from museums and theaters to brothels and sickrooms. Keats’ intensely sensual poems are at once bookish and attuned to his environment: they provide lessons on how to abide in a large urban center. For his writing is intensely urban, even when it ventures far from the gloom of the metropolis. Reading the letters he wrote to his brother on the (then-) frontier in Kentucky, we can find yet another key to how he shaped London. We will look at maps of the city, see where the new housing developments were being constructed as old buildings were torn down, visit the jail where his friend, Leigh Hunt, was incarcerated for ridiculing the Prince Regent, see the theater posters and pamphlets Keats saw, as well as the parks and squares he could not enter. The goal for this course is to learn about Keats’ work, but also to try to reconstruct how his city looked and sounded and felt and what, finally, it meant to the poet. Ideally, the course will collectively create a digitized map of Keats’s London that serves as well as a guide to his poems.
Prerequisites: Pre-req: AS.060.107
Instructor(s): M. Favret
Area: Humanities
Writing Intensive.

AS.060.353. World Literature in Theory and Practice. 3.0 Credits.
This course takes stock of how the current hot topic of "world literature" has evolved from Immanuel Wallerstein’s work on world-systems theory over the course of the last three decades. We will read work by a wide range of literary critics engaged with the topic of world literature, including Franco Moretti, Pascale Casanova, David Damrosch, Emily Apter, and Alex Beecroft, as well as major "world" novels by Herman Melville, Amitav Ghosh, and Chimamanda Adiche. Students will also be introduced to critical approaches that offer a conceptual alternative to the world literature framework, for example, Edward Said’s ideas on worldliness and contrapuntalism, Gaston Bachelard’s phenomenology of the home, Fredric Jameson’s concept of cognitive mapping, and Eric Hayot’s work on literary “world-creation.” We will ask just how broadly the field can be defined before it loses its critical cohesion. In other words, does world literature exist?
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.355. Eighteenth Century British Literature. 3.0 Credits.
This course surveys major authors, genres, and literary movements from 1690-1800. Topics to be discussed include the gendered division of labor, ecological consciousness, British imperialism, the rise of capitalism, and the relation between literary and material labor. We will be reading a variety of texts in poetry, prose, drama, and the novel from authors including Alexander Pope, Daniel Defoe, Jonathan Swift, Eliza Haywood, Stephen Duck, Mary Collier, Mary Leaper, Samuel Richardson, Thomas Gray, Oliver Goldsmith, William Wordsworth, Anna Laetitia Barbauld, and William Blake. Texts will be supplemented with historical, philosophical, and theoretical materials where appropriate. A pre-1800s course.
Instructor(s): K. O’Brian
Area: Humanities
Writing Intensive.

AS.060.356. Gordimer and Coetzee: Politics and Form. 3.0 Credits.
A comparative study of major works by the South African Nobel Laureates Nadine Gordimer and J.M. Coetzee. Special attention to critical essays by both writers about each other, as well as about issues of shared historical and literary concern. Topics will include the role of the public intellectual in apartheid-era South Africa, competing scales of literary reception and evaluation (e.g. national, international, and universal), and the relationship between politics, form, and genre.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.358. Prophecy and Enlightenment. 3.0 Credits.
This class considers the relationship between prophecy and enlightenment. These two knowledge regimes, the revelatory and the rational, are often assumed to be opposed, with rationality triumphing over revelation in the seventeenth and eighteenth centuries. In recent years, notably post-9/11, we have seen a resurgence of this view from a variety of perspectives, whether that of the new atheism or that of historians of enlightenment. We will turn to a number of important primary texts associated with major enlightenment thinkers in order to interrogate more closely the opposition of prophecy and enlightenment at the point of its supposed origin. Doing so should help at once to clarify and complicate the important contemporary narrative pitting science against religion and vice versa. Later in the semester, we will turn to a number of twentieth-century thinkers who bring quite different perspectives to the role of revelation in the history of reason. Pre-1800s course.
Instructor(s): W. Miller
Area: Humanities
Writing Intensive.
AS.060.359. Posthumanist Literature. 3.0 Credits.

Much of the attention surrounding posthumanism has centered upon a late twentieth-century archive of speculative fiction. This 300-level course would take a longer view, tracing a prehistory of literary and critical discourses that challenge the distinction between humanity and its nonhuman others from the late enlightenment to the present day. Students will begin with sections from Jonathan Swift’s Gulliver’s Travels and A Modest Proposal, then progress through texts that link the humanist themes of exploration and conquest to problems of consumption and divergent forms of life, including Herman Melville’s Typee and Thomas M. Disch’s The Genocides. Next they will turn to the link between the bildungsroman, human enhancement, and the concept of “bare life.” Readings in this section include Neal Stephenson’s The Diamond Age, Philip K. Dick’s Do Androids Dream of Electric Sheep, Franz Kafka’s “The Hunger Artist,” and Primo Levi’s If This Is a Man. We will then consider the link between “monstrosity,” hetero-normativity, and sexual abjection. Readings include Mary Shelley’s Frankenstein, James Baldwin’s Another Country, and Margaret Atwood’s Handmaid’s Tale. The course will conclude with two units on posthuman ethics. The first of these, on the concept of “singularity,” will include J.G. Ballard’s The Drowned World and William Gibson’s Neuromancer. Finally, students will consider what Donna Harraway has termed “companion species,” with readings to include Franz Kafka’s The Metamorphosis and J.M. Coetzee’s Elizabeth Costello. Critical readings will include selections from Katherine Hayles, How We Became Posthuman; Donna Harraway, “A Cyborg Manifesto”; Friedrich Nietzsche, Human, All too Human; Michel Foucault, The History of Sexuality, vol. 1; Giorgio Agamben, The Coming Community and Homo Sacer; Jean Jacques Rousseau, Émile; H.G. Wells, Anticipations and Mankind in the Making; Nick Bostrom, Human Enhancement and Global Catastrophic Risks; Alan Weisman, The World Without Us; Peter Singer, Animal Liberation; J.M. Coetzee, The Lives of Animals; and introductory essays by Andy Miah and Neil Badmington.

Instructor(s): J. Haley
Area: Humanities
Writing Intensive.

AS.060.362. Art and the Arab Spring. 3.0 Credits.

Much has been made of the political ramifications of the Arab Spring: the potential move towards democratic representation, the realization of minority and gender rights, the economic liberalization of markets, the jockeying by world powers to assert influence in the region, and the revitalization of dissident movements. This course will turn its attention to the role of artistic representation in the Arab Spring in order to complicate these political discussions. We will explore widely, considering works of prose, poetry, film, music, performance art, and visual art, from photography to graffiti. We will think through how these mediums are used and to what end, whether as evidence of atrocities, as inspiration and mobilization of dissent, as satirical commentary, or to revitalize appreciation for artistic expression. We will also think about the impact of social media on distribution possibilities and implied audience and track how certain art forms invoke and are invoked by liberal or conservative discourses in complex ways.

Instructor(s): N. Hashem
Area: Humanities
Writing Intensive.

AS.060.363. Henry James. 3.0 Credits.

This seminar will focus on the novels and short fiction of one of the most brilliant crafters of prose and plot ever to write in English. Extensive attention will be devoted to the intricacies of James’s language; to his transatlantic situation; to his relationship to other authors; and to his place in the histories of literature, criticism, and theory. In a few instances, we will read his work in relation to writing by his brother, the pioneering philosopher and psychologist William James.

Instructor(s): D. Mao
Area: Humanities
Writing Intensive.

AS.060.365. Literature and Modern Philosophy. 3.0 Credits.

Does literature have moral value? How might we begin to answer such a question? This course will survey major attempts by both writers and philosophers to understand the relation between morality and literature, especially fiction. Course will be taught by incoming professor Andrew Miller.

Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.360. Politics, History and Autobiography. 3.0 Credits.

This is an intensive seminar exploring the political and historical dimensions of personal experience. The class is designed to introduce students to writing critically about their own lives and to understanding the function of autobiographical writing in the lives of black Americans. We function partly as a writers’ workshop and partly as a critical review. The final goal of the seminar is a polished 15-20 page autobiographical essay and a 5-7 page critical review of an autobiography, such as would be found in the New York Review of Books.

Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.
AS.060.366. Ellison. 3.0 Credits.

After his landmark novel “Invisible Man” appeared in 1952 and won the National Book Award, Ralph Ellison was one of the most highly regarded and influential American writers. Although his writing—beginning with the powerful short stories and criticism that he published in the 1930s and 40s—was steeped in African American history, literature, music, and folklore, he also thought of himself as part of the great tradition of American, European, and classical literature, from Homer through Joyce. He quickly set to work on a second novel dealing with the assassination of a racist senator during the height of the Civil Rights movement, but he came to the end of his life in 1994 without having completed the novel to his own satisfaction. This massive book, which appeared posthumously in a very abbreviated form as Juneteenth and more recently in the much longer Three Days before the Shooting, reveals the work of a master while at the same time it leaves critics and readers with an exceptional puzzle: What would his final intention have been? Why was he unable to complete the novel? How does it speak to the key issues of African American identity, freedom, and the American ideal that Ellison grappled with all his life? At the same time that he worked on his second novel, Ellison became one of the most prolific and important essayists of the twentieth century, and wrote brilliantly about American race relations from the era of segregation through the twentieth century. Even as he was celebrated by the literary establishment, however, Ellison at times found himself as odds with younger black writers and thinkers who felt that public activism, not just artistic greatness, was required of the African American writer. Using Ellison as a lens through which to see the course of American race relations from slavery to the present, the course will include study of all of Ellison’s major work: the short stories collected in “Flying Home”, “Invisible Man”; the essays collected in “Shadow and Act” and “Going to the Territory”, as well as others; and “Three Days before the Shooting”.

Instructor(s): E. Sundquist
Area: Humanities
Writing Intensive.

AS.060.367. The Fallen Woman in Victorian Literature and Culture. 3.0 Credits.

This course aims to trace how Victorian literature and culture created, negotiated, or even contested “the fallen woman,” the stereotype of a woman who transgressed the norms of appropriate sexual conduct. A fallen woman was a figure of illegitimacy: an adulteress, an unmarried mother, a seduced maiden, a prostitute, or even just a woman who didn’t meet the norms of gender and sexuality. Although such a phrase itself has disappeared today, we continue to see similar stereotypes of women in our own cultural imagination. By looking at a range of Victorian fiction, poems, and images, we will trace how representations of the fallen woman created, negotiated, or even contested stereotypes that were circulating around them. Students will read novels that address questions of gender and sexuality in Victorian discourse, including Elizabeth Gaskell’s Ruth, George Eliot’s The Mill on the Floss, and George Moore’s Esther Waters. Shorter texts will include Gaskell’s short stories, and poems by Christina Rossetti, Augusta Wester, and Thomas Hardy.

Instructor(s): S. Lee
Area: Humanities
Writing Intensive.

AS.060.368. Aesthetic Play in the Contemporary Global Novel. 3.0 Credits.

This seminar will explore the role of aesthetic play within contemporary world literature in order to ask the question: what challenges to global issues such as imperialism, racial and identity politics, gender parity and socioeconomic disparities are being made not only through subject matter, but through novel approaches to form? We will read short stories, novels, graphic novels, and watch films which subvert expectations about the structure of storytelling: these may include works by Mohsin Hamid, Margaret Atwood, China Miéville, Haruki Murakami, J. M. Coetzee, and Marjane Satrapi. We will also read critical scholarship on the subject of world literature like Pascale Casanova’s World Republic of Letters and Aamir R. Mufti’s “Orientalism and the Institution of World Literatures.”

Instructor(s): N. Hashem
Area: Humanities
Writing Intensive.

AS.060.370. The Nineteenth Century Novel. 3.0 Credits.

In this course we will read some of the most significant—and enjoyable—of nineteenth-century novels, focusing on the questions they presented for their first readers and present for readers today. Our focus will be on the technical means by which the novelists achieve their effects. How do they convey the thoughts and feelings of their characters, for instance? How do they represent the interactions between their characters within broader social environments? How do these novels represent history? How do they represent different genders? By means of what literary devices do they do all this? Our aims in the course will be to understand the fiction of the period and to see how the devices used by these authors to conceive their psychological, ethical and political worlds continue to inform our conception of our world.

Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.371. Race and Space. 3.0 Credits.

Though we often think of the human fascination with the cosmos and the stars as universal and timeless, it has a history, including a literary one. This becomes especially vivid when we pay attention to the history of race. In this course we will explore the crucial role the cosmos and outer space have played in shaping understandings of emancipatory struggle, past and present.

Instructor(s): A. Begg
Area: Humanities
Writing Intensive.

AS.060.373. Literary Theory. 3.0 Credits.

Two great arguments structure literary criticism and theory: what makes something literature, and what makes something good literature? These arguments will surely never end; but to participate in them can be a great pleasure, and it can sharpen your appreciation of literary writing across the ages. This course will introduce you to the long conversation that has come to be called “literary theory,” with the aim of helping you learn to love not only reading literature, but describing it. Our readings will range from Plato and Aristotle to Kant, Hegel, and Scheiermacher, on to Marx, Freud, and Nietzsche, and finally to a range of recent thinkers.

Instructor(s): C. Nealon
Area: Humanities
Writing Intensive.
Writing Intensive.
Area: Humanities
Only to English Majors and Minors, and Writing Seminars majors.

Instructor(s): K. O'Briain
Area: Humanities
Writing Intensive.

**AS.060.374. Border Crossings: Travel Writing and the Journeys of Nonfiction. 3.0 Credits.**

The rise of “creative nonfiction”, in tandem with the acceleration of “reality hunger” in recent years, has shifted scholarly attention (and book sales) in the direction of that which is perceived to be real or true rather than merely imagined or fabricated. But how fictional is “faction”, and through what narrative means is the “real” produced? If nonfiction is a journey that involves the simultaneous opening and occulting of the real, then how does travel writing stitch together its quilts of place and emplacement? These are the kinds of questions we will be asking in this course, based on readings of celebrated contemporary nonfiction writers from across the globe: Haruki Marukami (Underground: The Tokyo Gas Attack and the Japanese Psyche), Katherine Boo (Behind the Beautiful Forevers: Life, Death, and Hope in a Mumbai Undercity), Bruce Chatwin (The Songlines), Jonny Steinberg (A Man of Good Hope), Paul Theroux (The Great Railway Bazaar), and Y.S. Naipual (The Enigma of Arrival). Only open to English Major/minors and Writing Seminars Majors

Instructor(s): L. de Kock
Area: Humanities
Writing Intensive.

**AS.060.375. Art and Labor in the Enlightenment. 3.0 Credits.**

In this seminar, we will investigate the relation between labor and aesthetics in the eighteenth century from three different perspectives. The first unit, “Empire and Colonization,” will place narratives of imperialism in dialogue with early notions of aesthetics as sensory experience. The second, “Gendered Divisions of Labor,” will take contemporary philosophies of beauty as a lens through which to read poetic and political representations of “women’s work” in the period. The third unit, “Mechanization, Industry, and Nature,” will consider industrial labor alongside accounts of the sublime. Some questions for discussion include whether this material upholds or contests political issues of forced labor and exploitation and how, if at all, art is an effective tool for social justice. We will read texts from a variety of genres and disciplines including poetry and prose by Behn, Wheatley, Defoe, Pope, Swift, Blake, and Wordsworth and works of political economy, philosophy, and art history by Locke, Hogarth, Smith, Burke, and Kant. Pre-1800 credit. This course is a Dean’s Teaching Fellowship award.

Instructor(s): K. O’Brien
Area: Humanities
Writing Intensive.

**AS.060.376. Staging Church and State in Early Modern England. 3.0 Credits.**

Freedom of religion and the separation of church and state are among the fundamental principles of modern western government, and yet they are frequently misunderstood. Why would people believe they have a mandate from God to grant freedom of worship to religious minorities? Why did the state give up its monopoly on religion? What role should religious beliefs play in public life? These all remain live questions in today’s political discourse, but today their complex answers tend to hide behind the ill-defined concept of secularity. This course examines a pivotal moment in the development of modern governance to ask what imaginative writing can tell us about the ways in which the early moderns sought to resolve these tensions between religious belief and participation in diverse civil society. Dean’s Teaching Fellowship. Open Only to English Majors and Minors, and Writing Seminars majors.

Instructor(s): K. Roberts
Area: Humanities
Writing Intensive.

**AS.060.377. Re-Writing Democracy in America, 1865-1920. 3.0 Credits.**

In his landmark two-volume work Democracy in America (1835, 1840), Alexis de Tocqueville famously argued that the ideal of democratic equality pervaded all aspects of life in America. Despite these claims, it was only after the Civil War, with the Reconstruction Amendments (1865-1870), that the language of equality made its way into the U.S. Constitution. Even as Africans Americans gained the promise of equality before the law by 1870, Jim Crow laws persisted well into the 20th century, while women did not win the long fight for suffrage until 1920. This course will consider how American writers between 1865 and 1920 consciously or unconsciously re-wrote Tocqueville’s analysis of democracy in America to account for the opening up of political equality to once-excluded groups as well as the undemocratic realities that many people experienced in their everyday lives (in the form of discrimination, deepening class divisions, and gender inequality). Reading novels, poems, autobiographies and travel narratives from this era, we will explore the extent to which democratic reform registers in lives of everyday individuals, with an eye for those moments when state-level changes are reflected or, more commonly, come up short in practice.

Instructor(s): J. Sampson
Area: Humanities
Writing Intensive.

**AS.060.378. Advanced Introduction to African Literature. 3.0 Credits.**

This course reaches beyond the much-taught postcolonial African realist canon to explore less-studied, more formally challenging works from across the continent, focusing on long-form prose and poetry. While texts will be clearly placed in an historical context, the emphasis in our readings will be on the inception, evolution, and intermingling of literary genres. How do seminal moments in African literary history complicate our received understandings of periodicity, mimesis, and the relation among selfhood, collectivity, and narration? What possibilities exist for theorizing African literature as a corpus, and what, conversely, are the descriptive and institutional limitations of “African Literature”? Primary texts will include “Ethiopia Unbound” (J.E. Casely Hayford); “Chaka” (Thomas Mofolo); “The Wrath of the Ancestors” (A.C. Jordan); “Song of Lawino” (Okot p’Bitek); and “The Promised Land” (Grace Ogot), as well as poetry by Shaaban bin Robert and H.I.E. Dhlomo, among others. We’ll pay some attention, too, to critical trends and contextualization.

Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.
AS.060.379. Stage and Screen. 3.0 Credits.
Shakespeare's King Lear has a paradoxical reputation in that it is arguably the greatest drama in English, yet it cannot be performed on stage, at least not without sacrificing its dramatic power. What happens when this notoriously unstageable play is turned into a film, as in Akira Kurosawa's epic masterpiece Ran? Does Kurosawa compensate for the limitations of the stage? What is gained or lost when the drama takes place in Japanese instead of Shakespeare's blank verse? This course will examine the ways that playwrights, theatre producers, and filmmakers manage the dramatic possibilities of text, stage, and cinema. Alongside their cinematic counterparts, we will read tragedies by Shakespeare, Marlowe, and Goethe, eighteenth-century comedies, and modernist dramas, and as a class, we will discuss the often fraught transition between literary text and dramatic spectacle. How do filmmakers convey psychological states through camera techniques and editing that are unavailable to producers of live performances? What dramatic effects can be achieved in the intimate setting of a theatre that are impossible at a twenty-screen cineplex, or on your couch while streaming Netflix? Along with addressing these questions, the course is intended to cultivate active, informed viewership in conjunction with close readings of the plays themselves. Authors likely to be included: Shakespeare - Romeo and Juliet, Hamlet, King Lear; Marlowe - Doctor Faustus; Goethe - Faust; Wycherley - The Country Wife; Congreve - The Way of the World; Samuel Beckett, Tennessee Williams, Arthur Miller, Rabindranath Tagore, Henrik Ibsen. Visual media will include recordings of performances and adaptations by Lawrence Olivier, Kurosawa, Satyajit Ray, Andrei Tarkovsky, Jan Švankmajer, and Dangerous Liaisons, starring Glenn Close and John Malkovich, plus the Broadway musical, Damn Yankees!
Instructor(s): J. Hoffmann
Area: Humanities
Writing Intensive.

AS.060.380. Romantic Poetry: Imagining the People. 3.0 Credits.
Perhaps the most influential moment in modern letters, the Romantic period not only straddled the age of democratic revolutions, abolition, mass media and industrialization, it ushered in the modern concept of Literature and its social role. Among the most pressing issues of Romantic poetry were those related to representing, speaking for and speaking to an imaginary creature called The People, not wholly commensurate with that other imaginary creature, The Nation or its Citizens. So for instance, the Ballad revival of the period brought into print the ancient songs of "the folk," but the movement was riddled with fakes and forgeries. Raising literary inspired working class poets, women and ethnic minorities to reshape the English language through poetry. Yet at the same moment, literary gentlemen began to produce their own version of a marginalized and dispossessed "people." All these efforts can be set against a State effort to introduce the first national census, to account for all subjects of the crown. A struggle over who "counts" in the realm of literature clashed with fights over political institutions and the new science of political economy.
Instructor(s): M. Favret
Area: Humanities
Writing Intensive.

AS.060.381. 2500 Years of Tragicomedy. 3.0 Credits.
Spanning an arc from ancient Greek drama to the bleeding edge of contemporary literature, this course gathers together representative examples of a hybrid dramatic mode which has been derided by philosophers and dramatic theorists but beloved by audiences for millennia: tragicomedy. Variously understood as a comic play with dark elements or a dark play with a happy outcome, tragicomedy raises challenging questions about the nature of genre taxonomy, and the slippery relationship between authorial "tone," artistic intention, and emotional temperament. As such, tragicomedies offer a particularly revealing insight into both the history of drama and philosophical questions about the nature of spectatorial pleasure. Grounding ourselves with a reading of Aristotle's Poetics and a consideration of Plautus' "Amphitryon," we will read a broad swathe of plays divided evenly between a first half which focuses upon the ancient and early modern period and a second half focusing on the last century, possibly including: Euripides "Alcestis", Christopher Marlowe "The Jew of Malta", Anonymous, "Arden of Faversham", William Shakespeare "Hamlet" and "All's Well That Ends Well", John Fletcher "The Faithful Shepherdess", John Dryden "The Maiden Queen", Samuel Beckett "Endgame", Tom Stoppard "Rosencrantz and Guildenstern Are Dead", Harold Pinter "The Caretaker", Joe Orton, "The Erpingham Camp", Young Jean Lee "The Shipment." Pre-1800 course.
Instructor(s): A. Daniel
Area: Humanities
Writing Intensive.

AS.060.382. Jewish American Literature. 3.0 Credits.
A survey of major works, principally novels.
Instructor(s): E. Sundquist
Area: Humanities
Writing Intensive.

AS.060.383. Contemporary Russian Novel in English. 3.0 Credits.
Russia is back in the headlines, and its resurgence seems unlikely to waver anytime soon. But while many students are familiar with nineteenth-century novelists like Tolstoy and Dostoevsky, more recent Russian writing is often a mystery. This course approaches contemporary Russia through the careers of its two major living novelists, Vladimir Sorokin and Ludmila Ulitskaya, both of whose work spans the late Soviet period (1980s and 90s) through today. In addition to questions of genre, translation, and contemporary Russian literary culture's relation to Soviet models, we will consider how Sorokin and Ulitskaya have brokered Russia's intellectual standing on a world stage. Works studied will include Ulitskaya's Sonechka, The Funeral Party, and Daniel Stein, Interpreter, and Sorokin's The Queue, Day of the Oprichnik, and The Blizzard.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.383. Contemporary Russian Novel in English. 3.0 Credits.
AS.060.386. Reading the American Swamp. 3.0 Credits.
The Shape of Water, Creature from the Black Lagoon, Swamp Thing – what is it about the terrain of swamplands that inspires us to dream up hybrid creatures that live within them? This course takes a long view of the American fearful fascination with these amphibious landscapes, from the 18th century to today. In the 19th century especially, swampy landscapes came to evoke anxious fear of revolt and rebellion among white slaveholders while as many as two thousand escaped slaves found shelter and sustenance in the swamp's mazy topography. Who and what was lurking just beyond the swamp's wall of vines and veil of mist? Though the swamp of the 20th and 21st centuries retains a sense of dreary, foreboding mystery, a relatively new ecological discourse on swamplands (now called "wetlands") has emerged calling for protection of the strange and delicate balance of marsh life. The precarity of such ecosystems as the Florida Everglades comes to represent the toll two and a half centuries of environmental plunder has taken on the American landscape. At the same time, the 2016 presidential election saw the reemergence in American political rhetoric of calls to "drain the swamp" of the federal government. By turns, the swamp has represented growth and abundance, stagnation and decay, moral depravity, organic sanctuary, and has played the roles of both harbinger of devastation and safe-haven of the oppressed. At each twist, texts imagining swamplands give us a unique glimpse into the aesthetic, social, and political anxieties and struggles of the moment. This course aims to track these historical shifts and develop an understanding of precisely how and why they occur, all the while asking what it is about swamplands that attracts our deepest worries and our eeriest curiosities.
Instructor(s): N. Dubay
Area: Humanities
Writing Intensive.

AS.060.387. Black Empire. 3.0 Credits.
This course examines the transnational visions of Black Empire as articulated and framed by black thinkers, writers, and visual artists around the world, roughly between 1850 and 1950. We will consider how both individuals and groups (such as the United Negro Improvement Association) responded to imperialist maneuvers through discourses of Ethiopianism, Pan-Africanism, and anti-colonialism, and how these discourses interacted with one another in surprising ways, ways that reveal the black world's simultaneous attraction to and rejection of the imperial model in the nineteenth and twentieth centuries. Our reading will include novels, poems, essays, and critical texts—at least two of which share a title with this course—by W. E. B. Du Bois, Pauline E. Hopkins, Sutton E. Griggs, J. A. Rogers, Langston Hughes, George S. Schuyler, Claude McKay, Brent Hayes Edwards, Paul Gilroy, Wilson Jeremiah Moses, Michelle Ann Stephens, and others.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.

AS.060.388. Old World/New World Women. 3.0 Credits.
The course considers the transatlantic writing of three women in the early modern period, Anne Bradstreet, Aphra Behn, and Phillis Wheatley. We will consider issues of identity, spatiality, religion, commerce, enforced labor, sexuality, race, and gender, along with literary tradition, formal analysis and poetics. We will read a good deal of these early women writers. Foremost in our mind will be the question of how perceptions of space and time are mediated through the global experiences of early modernity.
Instructor(s): S. Achinstein
Area: Humanities
Writing Intensive.

AS.060.390. Literature and Visual Modernity. 3.0 Credits.
This course will study the idea of modernity, a term that has been of continuing use in trying to understand ourselves and our society. We will focus on the major works of prose, poetry, and painting that attempted to come to terms with modernity in the nineteenth century. Texts are likely to include non-fiction prose by Mill, Baudelaire, Darwin, and Benjamin; fiction by Henry James, Conrad, and Vernon Lee; poetry by the Brownings, Tennyson, and Hardy; and paintings (some at the BMA) by D.G. Rossetti, Turner and Cezanne
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.391. Early American Literature. 3.0 Credits.
This course is an introduction to literatures drawn from across the Americas, although primarily the British North American colonies that would eventually become the United States, from first contact in 1492 up through the American wars of independence. Our readings are roughly organized according to chronology and genre. We will think about the adapted and emergent generic forms through which "the New World" was ongoingly invented, including genres like the Indian captivity narrative and the slave narrative that arguably make their debut in world literary history in the Americas during this time frame. We will conclude by attending to the rather late emergence of the novel in American literary history, reading four novels that appeared in the early US national period. The objective of the course is simply to contextualize and analyze a wide array of texts, each of which richly rewards the engaged reader, in order to trace the origins of American literatures. Course texts may include contact narratives (Columbus, Caminha, Smith, Hennepin); conquest narratives (Mather, Las Casas, Poma de Ayala); Indian captivity narratives (Cabeza de Vacá, Rowlandson, Staden); slave narratives (Gronniosaw, Jea, Cugoano); revolutionary polemics (Paine, Bolívar); and the earliest American novels: William Hill Brown, The Power of Sympathy; Hannah Webster Foster, The Coquette; Leonora Sansay, Secret History or, the Horrors of Santo Domingo; Charles Brockden Brown, Arthur Mervyn.
Fulfills the pre-1800 requirement.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.

AS.060.392. Reading Ayn Rand. 3.0 Credits.
This course will investigate Ayn Rand, both as a novelist and as an enormously influential thinker. Special attention will be paid to the Soviet and American contexts that produced Rand's work, as well as her place in a lineage of conservative thought, and the influence she has had on American politics. The approach of this course will be critical, but, I hope, fair. Readings will likely include Anthem and Atlas Shrugged, as well as selections from Rand's philosophical works: Capitalism: The Unknown Ideal and The Virtue of Selfishness.
Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.
AS.060.393. Geoffrey Chaucer: Ribaldry, Romance and Radical Religion. 3.0 Credits.
Geoffrey Chaucer is sometimes called the 'father of English literature', but the deftness with which he captured the variety of the human condition, in poetic forms that were each, in themselves, startlingly new, was in so many ways an inheritance too rich for literary tradition to absorb. One reason to return to Chaucer's writing now is to see how funny (and even obscene) verse narrative can be, and how compelling a fourteenth-century love story remains. It is also to open a window onto a culture entirely different from our own but in which the power of language (the role of free speech), the freedom of the individual, the status of women, violent tensions between cultures and ethnicities and the role of religion in civil society were not only topical, but made the more so by Chaucer's powerful political vision and thought. Chaucer is timeless because he wrote so well that he always rewards reading (and the Middle English in which he wrote is very easy to master) but he is always worth reading because reading him is at once so eye-opening and such a pleasure, a way of stretching one's sense of the present by understanding (really understanding) a particular moment in the past. This class will pursue such understanding by paying particular attention to Chaucer's masterpieces, Troilus and Criseyde and The Canterbury Tales. But we will begin with a quick and easy workshop on Chaucer's language, and try to define, along the way, some of the more interesting aspects of his style. Our goal will be to learn to enjoy Chaucer's poetry by reading it carefully enough to take the full measure of what exactly it was about.
Instructor(s): C. Cannon
Area: Humanities
Writing Intensive.

AS.060.394. Class Fictions. 3.0 Credits.
This seminar investigates one of the central concerns of nineteenth-century fiction: social and economic class. Why did raising oneself from humble beginnings and falling into poverty become such familiar stories? And why are they still so familiar today? We will look at how a number of writers approached the topic of class mobility, each with a unique blend of excitement and anxiety. Authors will likely include Jane Austen, Honoré de Balzac (in translation), Charles Dickens, and William Dean Howells. In order to understand our topic better, we will also look at a selection of theoretical work on the nature of class.
Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.

AS.060.397. Thomas Pynchon. 3.0 Credits.
Intensive reading of two major Pynchon novels, along with theories of modernity, postmodernity, etc.
Instructor(s): C. Nealon
Area: Humanities
Writing Intensive.

AS.060.405. Psychoanalysis and Literature. 3.0 Credits.
In this course we will read some foundational texts by Sigmund Freud, and pair them with a select group of literary works—Sophocles' "Oedipus the King" and "Oedipus at Colonus", William Shakespeare's "Hamlet", Edgar Allan Poe's "The Purloined Letter", Wilhelm Jensen's "Gradiya"—which have inspired psychoanalytic ideas and generations of psychoanalytic literary interpretation.
Instructor(s): A. Daniel
Area: Humanities
Writing Intensive.

AS.060.501. Independent Study. 3.0 Credits.
Instructor(s): C. Nealon; D. Mao
Writing Intensive.
AS.060.605. The Decolonial Intellectual.
A recent resurgence of interest in decolonial theory raises important questions about the relationship between postcolonial literature and the institutions, as well as disciplinary frameworks, by which it's advanced. From Ngugi wa Thiong'o, to the writers of South Africa’s Drum generation, to the contemporary Afropolitan theorist Achille Mbembe, U.S. universities have been host to many of decolonization's notable intellectuals. This seminar takes a synthetic approach to understanding the forms and histories by which decolonization has been articulated: we'll survey fiction, personal and political essays, and “theory” to make sense of the various tensions at decolonization’s core (e.g. territorialization vs. de-territorialization, internationalism vs. cosmopolitanism, or text vs. context). Writers studied will include Frantz Fanon, Lewis Nkosi, Ayi Kwei Armah, Ngugi wa Thiong'o, Walter Mignolo, An Yountae, Kwame Nkrumah, Hamid Dabashi, Buchi Emecheta, and Sylvia Wynter, among others.
Instructor(s): J. Jackson
Area: Humanities
Writing Intensive.

AS.060.609. Extreme Criticism.
"How far can I go?" It is a question (memorably posed by Neil Hertz) of what we might call interpretive tact: what will your readers or listeners accept? How far can you take them with you as you enter into the interpretive possibilities that have come to matter to you, that you believe to be true, meaningful, important, interesting . . . When, eyes slowly unfocusing, do they start drifting away? That most of the critics we read are determinedly tactful is an occasionally dismaying thought.
This seminar, by contrast, will engage the issue of interpretive tact by reading critics who might be thought to violate it. I’d like to think about the issue with a collection of interested students. Among the potentially tactless works we might discuss are Stanley Cavell’s essay on King Lear, Laura Kipnis’s Against Love: A Polemic T.J. Clark’s The Sight of Death, Michael Fried's Flaubert's “Gueuloi,” Avita Ronnell's Telephone Book (or perhaps her less extreme Stupidity), Roland Barthes’ S/Z, Garrett Stewart’s Reading Voices, Franco Moretti's Distant Reading, Lauren Berlant's Desire/Love, William Empson's Seven Types of Ambiguity, Lee Edelman's No Future, Barbara Johnson’s “Bringing Out D. A. Miller” I’d be open to other suggestions by seminar members.
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.610. What is Reading?.
What is reading? The question is not meant metaphorically. “We take for granted,” Mark Taylor writes, “our capacities to invent and interpret, and devote ourselves to exercising those capacities and publishing the results.” Yet, he continues, “It is the capacities themselves that need explaining. Reading is not giving a reading . . . Giving readings is important and could be done better if we understood reading. . . . The most amazing phenomenon our profession confronts, and the one for which we have the least explanation, is that a reader can make sense of a text, and that there are certain regularities across the individual senses made of a given text” (Taylor 19). This seminar aims to bring us close to understanding the “most amazing phenomenon our profession confronts,” drawing on recent work in cognitive psychology, history of the book, disability studies, and theories of media new and old. We will consider debates about modes of reading as different as paleography, Braille, and scansion, and reckon with the possibility of non-human reading. I hope to invite in faculty from Cognitive Science and Informatics, Disabilities Studies, Classics and Library Science to explain what they mean when they talk about reading. But the final goal of the seminar is to help us identify the importance of literary studies in that conversation. To what extent does the literary object teach us about reading?
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.606. Renaissance Comedy.
Why is comedy so easy to enjoy and so hard to think about? Is “the comic” a genre, a mode, an affective state, a social practice, or none/ all of the above? What does comedy have to do with the body? What does it have to do with social location? What historical accidents, psychological barriers and cultural taboos must be re-considered in order to address these questions? Starting from classic texts in genre theory and psychoanalysis, this course try to put Aristotle and Freud into dialogue with recent early modern critical scholarship on affect, drama and the body. Possible texts/authors include: Aristotle’s Poetics; Sigmund Freud, Jokes and Their relation to the Unconscious; Rosalie Colie The Resources of Kind; Gail Kern Paster, The Body Embarrassed: Drama and the Disciplines of Shame in Early Modern England; Will Stockton, Playing Dirty: Sexuality and Waste in Early Modern Comedy; Julia Kristeva, Powers of Horror: An Essay on Abjection; Alenka Zupancic, The Odd One In: On Comedy, and others. The historical spine of the course will be a weekly sequence of classical and early modern comic plays by Plautus, Terence, Aristophanes, Peele, Lyly, Shakespeare, Jonson, Beaumont, Wycherley, Etherege, and Behn.
Instructor(s): A. Daniel
Area: Humanities.

AS.060.608. The Idea of Tradition.
The idea of tradition – of a body from texts from the past that helps explain the genealogy of the present – is central to literary criticism, and indeed to all of the humanities. But where did we get the idea that the present could be understood best through texts from the past?
Can we imagine a humanities without it? This course will look at the idea of tradition -- of a body from texts from the past that helps explain the genealogy of the present -- is central to literary criticism, and indeed to all of the humanities. But where did we get the idea that the present could be understood best through texts from the past?
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Instructor(s): A. Daniel
Area: Humanities.

AS.060.609. Extreme Criticism.
"How far can I go?" It is a question (memorably posed by Neil Hertz) of what we might call interpretive tact: what will your readers or listeners accept? How far can you take them with you as you enter into the interpretive possibilities that have come to matter to you, that you believe to be true, meaningful, important, interesting . . . When, eyes slowly unfocusing, do they start drifting away? That most of the critics we read are determinedly tactful is an occasionally dismaying thought.
This seminar, by contrast, will engage the issue of interpretive tact by reading critics who might be thought to violate it. I’d like to think about the issue with a collection of interested students. Among the potentially tactless works we might discuss are Stanley Cavell’s essay on King Lear, Laura Kipnis’s Against Love: A Polemic T.J. Clark’s The Sight of Death, Michael Fried's Flaubert's “Gueuloi,” Avita Ronnell's Telephone Book (or perhaps her less extreme Stupidity), Roland Barthes’ S/Z, Garrett Stewart’s Reading Voices, Franco Moretti's Distant Reading, Lauren Berlant's Desire/Love, William Empson's Seven Types of Ambiguity, Lee Edelman's No Future, Barbara Johnson’s “Bringing Out D. A. Miller” I’d be open to other suggestions by seminar members.
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.610. What is Reading?.
What is reading? The question is not meant metaphorically. “We take for granted,” Mark Taylor writes, “our capacities to invent and interpret, and devote ourselves to exercising those capacities and publishing the results.” Yet, he continues, “It is the capacities themselves that need explaining. Reading is not giving a reading . . . Giving readings is important and could be done better if we understood reading. . . . The most amazing phenomenon our profession confronts, and the one for which we have the least explanation, is that a reader can make sense of a text, and that there are certain regularities across the individual senses made of a given text” (Taylor 19). This seminar aims to bring us close to understanding the “most amazing phenomenon our profession confronts,” drawing on recent work in cognitive psychology, history of the book, disability studies, and theories of media new and old. We will consider debates about modes of reading as different as paleography, Braille, and scansion, and reckon with the possibility of non-human reading. I hope to invite in faculty from Cognitive Science and Informatics, Disabilities Studies, Classics and Library Science to explain what they mean when they talk about reading. But the final goal of the seminar is to help us identify the importance of literary studies in that conversation. To what extent does the literary object teach us about reading?
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

AS.060.607. The Idea of Tradition.
The idea of tradition – of a body from texts from the past that helps explain the genealogy of the present – is central to literary criticism, and indeed to all of the humanities. But where did we get the idea that the present could be understood best through texts from the past?
Can we imagine a humanities without it? This course will look at the idea of tradition -- of a body from texts from the past that helps explain the genealogy of the present -- is central to literary criticism, and indeed to all of the humanities. But where did we get the idea that the present could be understood best through texts from the past?
**AS.060.611. Early/Modern/Violence.**

This course looks at the intertwining of the categories of secular and religious in the English literature of violence in the early modern period. Literary representations of, and meditations upon, violence will be considered in Spenser, Nashe, Marlowe, Milton and Behn. Early modern thinkers will include humanists, theologians and philosophers (Augustine, Ficino, Calvin, Hobbes, Spinoza, Locke). We will consider such topics as: How religion is (or is not) a ‘transhistorical’ category; how the Enlightenment’s critique of religion was founded on the experience of the ‘wars of religion’; the creation of religious Others; the connection between religion and the rise of the modern state; the war-peace distinction; the friend-enemy distinction; how the sacredness of human life is understood; the links between violence and humanitarianism (indeed, what is the human?); torture; ‘violence’ as a transhistorical category; the pairing of violence to justice. There will be engagement with contemporary thought of Arendt, Derrida, Benjamin, Zizek, Anidjar, Asad, Tilly, Virilio, Schmidt, Girard, Scarry, Taylor and others.

Instructor(s): S. Achinstein

Area: Humanities

**AS.060.612. Poetry and Poetics After the Linguistic Turn.**

This course is a survey of recent critical work on English-language poetry, mostly North American. Much of the work is by younger scholars. I have chosen to highlight this recent body of writing because I think that, taken together, it signals a shift away from what since the 1980s had been the dominant model for “reading” poetry, which was under the sign of “Theory”. Readings will include work by Jasper Bernes, Joel Nickels, Nadia Nurhussein, Margaret Ronda, Daniel Tiffany, and others.

Instructor(s): C. Nealon

Area: Humanities

Writing Intensive.

**AS.060.613. American Movement.**

This seminar will examine representations of people in motion in U.S. writing from 1900 to the present. Migration, international and intranational, will be central to our study, but we’ll also consider other forms of travel, transits of authorial and readerly attention, the policing and pleasures of vagrancy, and predicaments of stasis in both primary texts and critical/theoretical work around mobility. Our syllabus is still in process, but authors and directors studied may include Henry James, Anzia Yezierska, Claude McKay, Gertrude Stein, Muriel Rukeyser, John Steinbeck, John Ford, Simone de Beauvoir, Victor Villaseñor, Juliana Spahr, and Jayne Anne Phillips.

Instructor(s): D. Mao

Area: Humanities

Writing Intensive.

**AS.060.614. Postcolonial/Global/World.**

The field now known as “global Anglophone literature” has emerged from a complicated and rapidly advancing disciplinary lineage. A host of past and present recodings – including postcolonial, Commonwealth, Third World, global, transnational, world, and the Global South – provide a record of the wider profession’s anxieties in relation to non-Western literary traditions. This course prepares graduate students to be able to articulate some of the subtle differences in approach that this nexus of closely related terms may obscure, from the heyday of postcolonial theory in the 1980s and 90s to contemporary subfields like Indian Ocean studies. In addition to key critical texts by theorists including Edward Said, Gayatri Spivak, Franco Moretti, Peter Hallward, and Emily Apter, students will be introduced to some outstanding recent methodologies and critiques from the adjacent body of work on comparative literature.

Instructor(s): J. Jackson

Area: Humanities

Writing Intensive.

**AS.060.615. The Literary and the Secular.**

Embedded in many theses of secularization is an implicit process of tropologization—the sign that secularization is underway is precisely when sacred forms and contents begin to circulate as figures unmooed from their original devotional contexts and thereby become subject to everything from blasphemous parody to heterodox elaboration to blasé immanentization, in a word, to the whims of the literary imagination. This seminar will examine theories of secularization that reflect and reflect upon this tacit linkage of the secular and the literary and also trace crucial developments in the literary and intellectual history of Atlantic Romanticism (with a special focus on the distinctive genre of the American romance) that might offer alternative views of undeniable transformations perhaps ineffectively referred to the rubric of “secularization.” Secondary texts may include T.H. Hulme, “Romanticism and Classicism”; Carl Schmitt, Political Theology; Hans Blumenberg, The Legitimacy of the Modern Age; M.H. Abrams, Natural Supernaturalism; Charles Taylor, A Secular Age; Roberto Calasso, Literature and the Gods; Michael Kaufmann, “The Religious, the Secular, and Literary Studies”; Colin Jager, Unquiet Things: Secularism in the Romantic Age. Primary texts may include selected poetry of William Blake, Percy Shelley, Friedrich Hölderlin, and others; canonical theoretical definitions of the “romantic” from the Schlegels, Coleridge, etc.; Joseph Smith, The Book of Mormon; Edgar Allan Poe, Arthur Gordon Pym; Nathaniel Hawthorne, prefaces, selected tales, The House of Seven Gables, The Marble Faun; Herman Melville, Mardi; Harriet Beecher Stowe, Dred; Martin Delaney, Blake or, the Huts of America.

Instructor(s): J. Hickman

Area: Humanities

Writing Intensive.

**AS.060.616. Milton.**

A seminar covering the career of John Milton, including all his major poetry and much of his prose. There will be attention to the history of printing, publication and concepts of reading and writing, as well as to current issues and topics within early modern studies that bear on Milton (e.g. materialism, secularization, ‘surface’ reading, political theology, quantitative vs hermeneutic methods, actor-network theory). As such, the course will also be an introduction to various methods in early modern studies.

Instructor(s): S. Achinstein

Area: Humanities

Writing Intensive.
AS.060.617. Black Print Culture.
Students interested in black print culture will engage in intensive archival research, both collaborative and individual, using the Sheridan Library’s Rare Book and Manuscript collections. Texts include poems, printed lectures, pamphlets, novels, periodicals, ephemera, correspondence, etc., alongside relevant critical and theoretical reading.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.

AS.060.618. Modernism and Authenticity.
Could modernism as we know it have emerged absent anxiety about what it means really to live, really to feel, really to think? We will explore this question through a range of texts—long and short, fictional and non-fictional, poetic and in prose—by authors such as Friedrich Nietzsche, Oscar Wilde, Gabriele D’Annunzio, W. B. Yeats, T. E. Hulme, E. M. Forster, Mina Loy, T. S. Eliot, F. T. Marinetti, Gertrude Stein, Virginia Woolf, William Carlos Williams, Nella Larsen, Wallace Thurman, Walter Benjamin, Theodor Adorno, and Lionel Trilling. Topics to be considered will include decadent imposture, the attenuation of experience, enchanted and disenchanted violence, and technology-driven alienation.
Instructor(s): D. Mao
Area: Humanities

This course offers a critical and historical introduction to the Frankfurt School.
Instructor(s): M. Thompson
Area: Humanities

AS.060.621. The Cultures of the Sonnet in the English Renaissance.
This is a course on lyric theory in the Renaissance and as such is a good introduction to early modern literary study. We will take up the early modern form of the sonnet as a test case for the interaction between vernacularity and globalization. We will consider early modern topics including “invention,” “imitation,” and rhetoric, as well as explore formal concerns that are intertwined with political, social, cultural and economic experiences of early modernity. Along with the consideration of the emergence of literatures in new languages and nationalist differentiation, we will also consider mechanization (whether in print or literary trope) that produced both early modern literature and political life in an international system. We will consider such topics as sequence; modes of address; vernacularity and linguistic nationalism; the themes of love and empire; the social role of the sonnet; the nature and materiality of writing; patronage and circulation; the question of private, occasional, and public poetry; the place of sonnets in manuscript collections; the histories of books; poetic subjectivity and objective thought; and we will also read a good many sonnets, largely in English, through close attention to language, media and transmission histories. Some contemporary literary theory on the sonnet will be introduced, as well as sonnets in European languages other than English, depending on the students’ interests and proclivities. Students will be expected to work in the manuscript and print collections of the Bodleian library to prepare a class report on their chosen topics. The class puts the sonnet in relation to other forms in Renaissance literature and thus should serve as a good survey of the period and its issues.
Instructor(s): S. Achinstein
Area: Humanities
Writing Intensive.

AS.060.622. Perspective.
Perspective, or point of view, is a seemingly inescapable term in critical work on fiction. In this course we will study this concept as it has been developed in literary studies and, contrastively, in art history and film studies. We’ll enter two overlapping areas of study, one theoretical, one critical. The first concerns the concept of perspective as developed in literary theory, art theory, and film theory; the second concerns a set of fictions, paintings, and films. Our aims will be to develop a more adequate understanding of the concept and to assess the implications of our current usage of it.
Instructor(s): A. Miller
Area: Humanities

AS.060.623. Cross-Period Literary Study.
This seminar will be an experiment in training graduate students to develop an awareness of scholarship outside their own historical period, so as to re-think contemporary questions of periodization and modernity, as well as genre and form. The course will be organized around literary-critical readings from recent scholarship from the classical period to the 21st century, and around visits from scholars, especially junior scholars, working in those periods.
Instructor(s): C. Nealon
Area: Humanities

AS.060.624. Romanticism and the Ends of Affect.
This seminar will consider both what affect studies have learned from Romanticism and the limits –practical, ethical, intellectual –of reading Romantic poetry within the framework that has been constructed by affect studies over the past two decades. It will provide a general survey of scholarship on affect, of criticism attending to the self-consciously affecting literary experiments of the age, and to primary works by a select number of romantic writers, most probably Wordsworth and Coleridge’s Lyrical ballads, Joanna Baillie’s Plays and the letters and poems of John Keats.
Instructor(s): M. Favor
Area: Humanities

AS.060.625. Theory of the Novel.
This course will look at the development of novel theory from the eighteenth century until the present. Authors will include Scott, Barbauld, Dallas, Lewes, Eliot, James, Shklovsky, Tomashovsky, Jakobson, Bakhtin, Lukács, Auerbach, Barthes, Jameson, Girard, Sedgwick, Moretti, Armstrong, Miller, Hale, Lynch, and Woloch. Novelists will likely include Madame de Lafayette, Austen, Goethe, and Wolfe.
Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.

AS.060.626. Reading for Race at the Movies and on TV, in the years 2015-16.
2015-16 was a radical, decisive two-year period for many things, including film by and about African-Americans. This course seeks to understand this phenomenon through current events, wider aesthetic and historical trends, and the body of critical work devoted to reading filmic representations of cultural and political ideologies. 2015-16 films and TV shows under consideration will include: Moonlight; Creed; Hidden Figures; Fences; Birth of a Nation; Straight Outta Compton; OJ: Made in America; Atlanta; Black-ish; This Is Us; Luke Cage; The People v. OJ Simpson.
Instructor(s): M. Thompson.
AS.060.627. Poetry and Performance.
This course will be devoted to the histories and theories of 19th-, 20th-, and 21st-century poetry and performance, beginning with William Wordsworth’s and Samuel Taylor Coleridge’s Lyrical Ballads. Upon hearing the poets read, William Hazlitt remarked that “[t]here is a chaunt in the recitation both of Coleridge and Wordsworth, which acts as a spell upon the hearer, and disarms the judgment.” This early instance of reception history will provide the backdrop for our discussion throughout the semester. Besides Wordsworth and Coleridge, our reading list will include verse, theory, and criticism by Robert Browning, Walt Whitman, T.S. Eliot, James Weldon Johnson, Langston Hughes, William Carlos Williams, Charles Olson, Allen Ginsberg, Norman Pritchard, Amiri Baraka, Tracie Morris, Christian Bök, Lisa Gitelman, Frederick Kittler, Peter Middleton, John M. Picker, Susan Stewart, and others.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.

AS.060.630. Mapping Frederick Douglass’s Escape: An Historic Maryland Odyssey.
This course provides an in-depth portrait of the historic Marylander Frederick Douglass, born near Hillsboro in Talbot County, Maryland around 1818, and who successfully escaped slavery in Baltimore in September 1838. We will read Douglass’s three autobiographies and other writings, as well as two biographies of Douglass to understand his importance in American life over time. The course includes three “living classroom” components. At the Douglass/Meyers Museum at Fells Point, Baltimore, students will learn 19th century techniques to build a sailing such as Douglass learned when he worked in the shipyards. Students will tour the Anacostia, DC Frederick Douglass Museum. The course culminates with a sailing trip from Baltimore’s Fells Point to historic St. Michael’s, kayaking along the Tuckahoe and Miles Rivers, and overnight camping on the grounds of a former plantation on Maryland’s Eastern Shore.
Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

AS.060.631. Tyranny in Early Modern Literature.
In the Epistle to the Romans, Paul writes: “Let every soul be subject unto the higher powers: for there is no power but of God: and the powers that be, are ordained of God.” In the wake of such a declaration, what constitutes tyranny? When is resistance to tyranny justified? What forms of recourse are compatible with the Christian obedience enjoined by Paul? How did early modern literature offer a means of leverage, redress and coping with the depredations of “the powers that be”? In search of provisional answers to these questions, this course tracks the representation and rhetorical evaluation of the tyrant figure at the intersection of political philosophy and literature. Political writings by Aristotle, Plato, Marsiliius of Padua, Dante, Jean Bodin, James I, John Milton and Hanna Arendt are placed in dialogue with historical and theoretical writing by Greg Walker, Stanley Cavell, Mary Nyquist and Terri Snyder on tyranny, slavery, resistance theory and biopolitics. Literary texts, principally drama and prose romances, will include The Wakefield Master’s “Herod the Great”, Sir Philip Sidney’s “The New Arcadia”, Christopher Marlowe’s “Tamburlaine”, Robert Greene’s “Planetomachia”, William Shakespeare’s “Richard II” and “The Winter’s Tale”, Ben Jonson’s “Sejanus His Fall”, and Elizabeth Cary’s “The Tragedy of Mariam, Fair Queen of Jewry”.
Instructor(s): A. Daniel
Area: Humanities
Writing Intensive.

AS.060.633. Biography and African American Subjects from the 19th and 20th Centuries.
This course will read through contemporary biographical treatments of prominent 19th and 20th century African American writers to explore the prominent ideological predispositions as well as the structure of archival sourcing in the creation of life-writing on black subjects. Students will make research trips to the Library of Congress, the University of Delaware, Morgan State University and other local archives for instruction in research methodology and the collection of primary source materials. Student final projects will use primary archival sources to intervene in debates about the interpretation of historical subjects and historical events.
Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

In recent years, the literature of the middle of the twentieth century has come into its own. Now recognized as a period of exceptional invention, not merely the weak successor to the great age of high modernism, the 1930s through the 1960s gave us texts that, among other things, offer windows onto the birth of the postwar order. This course will examine challenging, fascinating, sometimes infuriating writing about World War II, the rise of the welfare state, and the “colonization in reverse” that brought the Windrush writers from the Caribbean to England. Authors studied may include Elizabeth Bowen, Anthony Burgess, T.S. Eliot, H.D., Richard Hoggart, George Lamming, Philip Larkin, Marghanita Laski, Sam Selvon, Alan Sillitoe, John Wain, Virginia Woolf, and John Wyndham.
Instructor(s): D. Mao
Area: Humanities
Writing Intensive.

This seminar offers an introduction to a key concept in contemporary critical theory and literary and cultural studies: settler colonialism, understood as a specific form of colonialism focused on the appropriation of land rather than the exploitation of labor and thereby involving the attempted elimination and replacement of indigenous polities and societies by an invading force. The course will have a dual focus: 1) tracing the theoretical distinction of settler colonialism from other forms of colonialism and tracking the critique implicit in this distinction of dominant forms ofleftism that arguably presuppose a settler-colonial frame of reference; 2) tracking the history of what James Belich has called the “Anglo settler revolution” of the nineteenth century and engaging in a comparative analysis of the literatures produced in the course of that revolution in what are now Ireland, the United States, Canada, Australia, and elsewhere in the Pacific. We will especially attend to narrative fictions—often (self-) identified as “romances”—that chronicle settlement and register the temporal disruption of indigenous persistence and resistance. Secondary texts may include: Belich, Replenishing the Earth; Glen Coulthard, Red Skin, White Masks; Aileen Moreton-Robinson, The White Possesse; Eve Tuck and K. Wayne Yang, “Decolonization is Not a Metaphor”; Patrick Wolfe, Settler Colonialism and the Transformation of Anthropology. Primary texts may include: Charles Brockden Brown, Edgar Huntly; S. Alice Callahan, A Child of the Forest; Marcus Clarke, His Natural Life; Susanna Moodie, Roughing It in the Bush; Herman Melville, Typee; Sydney Owenson, The Wild Irish Girl; Simon Pokagon, Ogemawkwe Mitigwaki (Queen of the Woods); John Richardson, Wacousta or, The Prophecy; Catharine Maria Sedgwick, Hope Leslie; and the FX television series, Taboo.
Instructor(s): J. Hickman
Area: Humanities
Writing Intensive.
This course will read the major writings of William Wordsworth as experiments in tracking feeling between individual and multitude. It will take advantage of two currents in recent criticism to work through the problem of how one feels with and for large numbers. On the one hand, this requires taking up models of sympathy and feeling that depart from those established since the eighteenth century, where models of sympathy relied on a 1:1 relationship between human persons. These alternative models attend to "multitudes," and thus a different scale of life, human and not (e.g. Spinoza, Virno, Hardt and Negri). On the other hand, reading Wordsworth in this light requires a reconsideration of the art of numbers — that is, poetry — alongside and sometimes in opposition to the science of numbers called political economy.
Instructor(s): M. Favret
Area: Humanities
Writing Intensive.

AS.060.647. Capitalism for Humanists.
Recent global crises of capital accumulation have obliged both scholarly and journalistic accounts of capitalism to become more sophisticated and comprehensive. This course will be an introduction to some of those accounts. We will approach the problem of describing capital and its dynamics from several angles: conversations about combined and uneven development, about the racialization of enslaved and "surplus" populations; about the forms of social reproduction (often gendered) proximate to the wage; about technological change, robotification, and its implications for the production of capitalist value; about theories of the value-form itself. One aim of this course will be to think about how a better understanding of capital — its history and its mechanics — can make us better scholars of literature, so we will also devote ourselves to assessing the resources and the limits of earlier literary-critical accounts of literature's relationship to capital accumulation.
Instructor(s): C. Nealon
Area: Humanities
Writing Intensive.

George Eliot's novels have been the focus of some of the most deeply thought criticism of the Victorian period. In this seminar we'll read a selection of those novels as they have invited the study of topics which may include the theory of the novel and of narrative; aesthetics and continental philosophy; representation and the nature of individuation; sympathy; the history of affect; formalism, politics, and ethics; the novel and emergent sciences. We'll spend most of our time on Middlemarch and Daniel Deronda, along with her non-fiction prose and some of her translation work of Spinoza and Feuerbach. We're likely to read criticism by Gallagher, Hertz, Woloch, Plotz, Anderson, and Duncan. Depending on student interest, we may also take up Eliot's relation to earlier literary figures—Wordsworth being a likely candidate.
Instructor(s): A. Miller
Area: Humanities
Writing Intensive.

This course serves as an advanced introduction to the texts, issues and criticism surrounding African-American literature. In it, we will read works from the field's major genres: the slave narrative; the novel; poetry; autobiography; the essay; and literary criticism. Authors under consideration will include: Wheatley; Du Bois; Douglass; Jacobs; Hurston; Hughes; Wright; Baldwin; Morrison.
Instructor(s): M. Thompson
Area: Humanities.

AS.060.663. Sacred Spaces and the Novel, 1853-1926.
This course offers both a survey of late nineteenth- and early twentieth-century prose fiction of Britain and its empire and an examination of recent scholarship on literature's relation to religion and the geographies of modernity. We'll begin with three Victorian novels inhabiting the convergence between historical imagination and religious inquiry (Charles Kingsley, George Eliot, Walter Pater), move on to three turn-of-the-century narratives in which the momentum of the quest confronts sacred implacability (Olive Schreiner, Joseph Conrad, Rudyard Kipling), and conclude with three novels of the 1920s propelled by pagan ecstasy (E. M. Forster, D. H. Lawrence, Sylvia Townsend Warner). Primary readings will be accompanied by critical and theoretical texts from György Lukács, René Girard, Fredric Jameson, David Harvey, Leela Gandhi, and others.
Instructor(s): D. Mao
Area: Humanities.

AS.060.665. Whitman and Dickinson.
An examination of the formal, conceptual, and philosophical innovations in the work of the two major nineteenth-century American poets. We'll consider the premises behind Whitman's poetry of wholes (nothing left out) and Dickinson's poetry of fragments. How does Whitman reconcile the need for formal universals with the emotional attachment to substantive particulars? How does Dickinson find a language for the off-the-map quality of private experience?
Instructor(s): S. Cameron.

This course takes its cue from a basic etymological kinship between "discovery" and apocalypse (??????????, literally "un-covering"). How are world-building and world-ending related? What pathways join the literary and philosophical construction of new worlds with theological and theoretical scenarios of revelation, extinction, and doom? In search of answers, this course reads Renaissance narratives of cosmogony, proto-science fiction and utopian discovery alongside contemporary theories of "worlding", environmental futurity, climate change, and planetary precarity. After commencing with Lucian and Plutarch, we will read a comprehensive sequence of early modern fictions in which utopias, new worlds and/or new planets are visited or "discovered": Thomas More, Utopia; Robert Greene, Planetomachia; Tommaso Campanella, The City of the Sun; Johannes Kepler, Somnium (The Dream); Francis Bacon, New Atlantis; Margaret Cavendish, The Description of a New World, Called the Blazing World; Aphra Behn's translation of Fontenelle's Conversations on the Plurality of Worlds. These early modern texts will be read alongside works in primary philosophy and contemporary eco-theory that unsettle key concepts: earth, planet, and world. Texts include Martin Heidegger, Being and Time; Jacques Derrida, "Of An Apocalyptic Tone Recently Adopted In Philosophy"; Timothy Morton, Hyperobjects: Philosophy and Ecology After the End of the World; Jeffrey Cohen, Prismatic Ecology: Ecotheory Beyond Green; Ray Brassier, "The Truth of Extinction" (from Nihil Unbound); Gayatri Chakravorty Spivak, "Planetarity" (from Death of A Discipline).
Instructor(s): A. Daniel
Area: Humanities.
AS.060.676. Facts and Fiction.
We will examine the vexed place of facts in literature and literary criticism. What are the historical and ideological preconditions for focusing on the study of people that never existed, and events that never occurred? And how did literary criticism privilege an analysis of meaning of works or literary moments, as opposed to verifiable, and reproducible facts? What does all of this tell us about the recent rise of quantitative literary analysis, and the strong resistance it has encountered? This discussion will include an examination of how different disciplines define notions like "fact," "argument," and "evidence"—in order to better understand our own discipline's principles. In addition to a selection of eighteenth- and nineteenth-century novels yet to be determined, readings will include Émile Zola, Martin Heidegger, Wolfgang Iser, Hans-Robert Jauss, Hans-Georg Gadamer, Bertolt Brecht, Georg Lukács, Fredric Jameson, Theodor Adorno, Karl Popper, Mary Poovey and Franco Moretti.
Instructor(s): J. Rosenthal
Area: Humanities.

AS.060.682. The 21st Century University.
This seminar will focus on the changing contours of the American university in an era of economic instability and crisis. With a look back at the formative relationship between monopoly capitalism and the university in the 19th century, we will investigate the effect of the unraveling of American economic power, with attention to the rise of administrative power and the loss of faculty governance, to the pressures of financialization, and to the contradictory situation into which the university is placed by student activism that calls its founding premises into question. We will also ask what intellectual life looks like under conditions of adjunctification and de-politicization. Reading will include selections from Gerald Graff, Professing English, Christopher Newfield's Ivy and Industry and Unmaking The Public University, Benjamin Ginberg's The Fall of The Faculty, Stefano Harney and Fred Moten's Undercommons, and [the x's] The University Against Itself, as well as material produced by student and faculty activists in the university struggles of the last 5 to 10 years.
Instructor(s): C. Nealon
Area: Humanities.

AS.060.692. The Enlightenment, Aesthetics and Race.
This course examines the philosophical interplay between Enlightenment aesthetics and the construction of the concept of race. We will read texts in aesthetics and on human difference by Rousseau, Voltaire, Condorcet, Kant, Herder, Jefferson, Burke, Hume and others, in an attempt to see the points at which reflections on art and notions of human biological hierarchy intersect. Particular attention will be paid to the idea of the sublime as it pertains to early anthropological thought.
Instructor(s): M. Thompson
Area: Humanities.

AS.060.694. Independent Reading.
Area: Humanities.

AS.060.800. Independent Study.
This course is a semester-long independent research course for graduate students. Students will have one-on-one assignments and check-in's with designated faculty throughout the semester.
Instructor(s): C. Cannon.

AS.060.801. Teaching Practicum.
Instructor(s): Staff
Area: Humanities.

AS.060.893. Individual Work.

AS.060.894. Independent Reading.
Area: Humanities.

Instructor(s): A. Daniel.

Cross Listed Courses
Classics
AS.040.145. Story and Argument from Homer to Petrarch. 3.0 Credits.
Stories entertain us, but we also tell them to make a point. This course will explore the ways that stories were used to make points by Greek and Latin authors from Homer to Petrarch, while also looking at, and comparing them to, the techniques of argument contemporaneous thinkers were developing. This is a course about narrative and rhetoric but also about how and in what way stories matter.
Instructor(s): C. Cannon
Area: Humanities.

History
AS.100.257. From Voice to Parchment: Media and Communication before the Printing Press, 800-1440. 3.0 Credits.
Epic traditions, call to Crusade, public curses, music of the troubadours: this course examines oral tradition and music—the "viral media" of pre-modern Europe—while tracing the impact of new recording technologies: early musical notation, manuscripts, and book production.
Instructor(s): J. Phillips
Area: Humanities, Social and Behavioral Sciences.

AS.100.326. From Blood Feud to Black Death: European Society in the High Middle Ages, 1000-1400. 3.0 Credits.
Explores the development of society and institutions in the medieval west including kingship and law, religion and difference, gender and ideology. Looks closely at social responses to change and adversity.
Instructor(s): A. Lester
Area: Humanities, Social and Behavioral Sciences.

AS.100.334. Billie Holiday and American Culture. 3.0 Credits.
A course examining introducing students to the life, times and music of Billie Holiday. We will read biographies, autobiographies, novels, and listen to music.
Instructor(s): L. Jackson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

History of Science Technology
AS.140.674. Science and Medicine in Early Modern Atlantic World Culture.
How were changes in scientific and medical ideas reflected in cultural products of the early modern Atlantic world? We will study these ideas as they appeared in literary genres such as poetry, utopias, natural histories and travel narratives. Likewise, we will examine the visual culture of the Atlantic space for clues about changing conceptions about the natural world. Our expedition will encompass Anglophone, French and Hispanic regions, and will pay careful attention to hybrid cultural products that reflect the interaction between indigenous cultures and the (changing) European understanding of the natural world.
Instructor(s): M. Portuondo.
German Romance Languages Literatures

AS.211.295. Staging History: Theater and Society in the Courts of Europe. 3.0 Credits.
During the 17th century, the growth of the play-going public of London, Madrid, and Paris transformed theater into an exceptional channel for cultural expression. This course combines the study of theater history, including the spaces, audiences, actors, and playwrights, with the literary analysis of major plays by Christopher Marlowe, Ben Jonson, Lope de Vega, Pierre Corneille, and Madame de Villedieu. The main objective of this course is to examine and discuss early modern drama in light of contemporary life at court.
Instructor(s): F. Gomez Martos
Area: Humanities.

AS.211.333. The Holocaust in Film and Literature. 3.0 Credits.
How has the Holocaust been represented in literature and film? Are there special challenges posed by genocide to the traditions of visual and literary representation? Where does the Holocaust fit in to the array of concerns that the visual arts and literature express? And where do art and literature fit in to the commemoration of communal tragedy and the working through of individual trauma entailed by thinking about and representing the Holocaust? These questions will guide our consideration of a range of texts — nonfiction, novels, poetry — in Yiddish, German, English, French and other languages (including works by Primo Levi and Isaac Bashevis Singer), as well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Steven Spielberg). All readings in English.
Prerequisites: Cannot be taken by anyone who previously took AS.213.361
Instructor(s): S. Spinner
Area: Humanities.

AS.211.337. Wandering Jews? Jewish Migration in Film and Literature. 3.0 Credits.
Migration in all its forms has played a major role in shaping Jewish identity throughout history. From the Biblical exodus from Egypt through the beginnings of the diaspora under the Romans to the massive European Jewish immigration to America in the late 19th and early 20th centuries to the founding of the state of Israel, the migrations of Jews have also had a major place in Jewish literature. Going all the way back to the Bible, but focusing on the 20th century, this course will explore the ways in which literature and film represent the experience of migration, whether negative (compelled by expulsion or violence); positive (lured by economic or social opportunity); or somewhere in-between. We will examine poetry, plays, prose and film in Yiddish, German, Hebrew, and English (all in translation) on aspects of Jewish migration including the social and political factors motivating migration from the countryside to the shtetl (town) to the city and from Central and Eastern Europe to the Americas, Palestine, and Israel. Issues under discussion will include: adaptation and assimilation; minority rights; what is the relationship of old and new or major and minor languages and literatures?; what is the place of tradition and heritage in a diasporic context? We will also consider the resonances between contemporary debates on migration and historical examples of these issues as they are reflected in literature and film.
Instructor(s): S. Spinner
Area: Humanities
Writing Intensive.

AS.211.361. Narratives of Dissent in Israeli Society and Culture. 3.0 Credits.
In this course we will study and analyze the notion of dissent in Israeli society and culture on its various literary and artistic forms. We will examine the emergence and the formation of various political and social protest movements, such as the Israeli Black Panthers, Israeli feminism and the 2011 Social Justice protest. We will discuss at length the history and the nature of dissent in the military and in relation to Israeli wars and will track changes in these relations. Significant portion of the course will be dedicated to the literary, cinematic and artistic aspects of Israeli dissent and their influence on Israeli discourse. We will explore the nature and role of specific genres and media such as the Israeli satire, Israeli television, newspaper op-ed and the recent emergence of social media. Students wishing to work in English exclusively for 3 credits should enroll in section one. Students who are fluent in Hebrew and are willing to attend an additional hour-long Hebrew discussion session per week with Professor Cohen (time TBD in consultation with enrolled students) for 4 credits should enroll in section two.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.

AS.211.445. Rogues, Tricksters, and Saints: Boccaccio’s Decameron. 3.0 Credits.
Boccaccio’s Decameron (1352), a collection of 100 short stories, ranges from the bawdy through the cynical to the romantic and even fantastic. It has inspired numerous writers, artists, musicians and film-makers. We will read Boccaccio’s masterpiece on its own terms and in relation to the development of story-telling, from gossipy “news” (novelle) to artistic short story, theatrical adaptation, literary fairy-tale, and the fantastic. The Decameron will be compared with its forerunners in saints’ lives, bawdy fabliaux, and moral exempla, and with its literary, theatrical, and cinematic imitators in Italy and Europe. Italian graduate students and undergraduate majors will attend an extra weekly meeting conducted in Italian.
Prerequisites: Students may not have taken AS.214.445.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.211.475. Inside the Writer’s Laboratory. 3.0 Credits.
How do books come to life? Behind every masterpiece is a tale of hard work, dialogue with other texts, and constant negotiations with social and material circumstances that evolve over time. This course opens up the “laboratory” of figures of the European Renaissance like Erasmus, Machiavelli, and Montaigne to explore the world of writerly culture in its manifold expressions, including authorial revision, self-translation, controversy, censorship, intertextuality, and forgery. Our own laboratory will be the Department of the Special Collections, where we will spend a good deal of our time handling manuscripts and early printed books. Course may be used to satisfy major requirements in both French and Italian sections.
Instructor(s): S. Miglietti
Area: Humanities
Writing Intensive.
AS.211.479. Dante's Journey through the Afterlife. 3.0 Credits.
Dante's Divine Comedy presents a complete picture of the medieval world-view in all its aspects: physical (the structure of the cosmos), historical (the major actors from Adam to Dante himself) and moral (a complete system of right and wrong). Dante shows how the Christian religion portrayed itself, other religions, the nature of God, humans, angels and devils, and human society. We will explore these topics both from the viewpoint of Dante's own time, and in terms of its relevance to our own societal and cultural concerns.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.212.478. Guillaume de Machaut: exploring medieval authorship in the digital age. 3.0 Credits.
Using new websites devoted to the lyrics and music of Guillaume de Machaut, the foremost poet and composer of the 14th-century French royal court, this seminar will explore the role of music and literature during the Hundred Years War. The course aims to give students a thorough grounding in Machaut's literary and musical works, while also introducing them to digital tools to view and analyze original illustrated musical manuscripts of his work. Critical analysis of Machaut's work will be assessed not only through more traditional essay writing, but also through the creation of a multimedia digital edition of a section of his oeuvre using Omeka exhibition software. The course is designed so that no prior knowledge of musical notation or medieval French is necessary.
Instructor(s): T. Rose-Steel
Area: Humanities
Writing Intensive.

AS.211.480. Religious Themes in Film and Literature. 3.0 Credits.
This course would be of interest to anyone who would like to learn about the intersection of religion and modern culture. At the center of the course will stand a close study of the representation of religious themes and their role in modern literature and cinema. The works which we will deal with are not considered religious and yet they include religious themes or aspects of their narrative, images, language or symbolic meaning. We will trace in various works from various countries and genres, themes such as: divine justice, providence, creation, revelation, the apocalypse, prophecy, sacrifice and religious devotion. We will also study the ways in which Biblical and New Testament stories and figures are represented in these works. The course will have a comparative nature with the aim of learning more about the differences between the literary and cinematic representations.
Instructor(s): N. Stahl
Area: Humanities.

AS.211.754. Modernist Primitivism.
This course will explore the aesthetics and politics of primitivism in European modernity, focusing on the visual arts and literature in German and Yiddish, but looking at the wider European context, including France and Russia. We will begin with the backgrounds of primitivism in Romanticism, looking especially at its ethnographic and colonial sources. We will then focus on the presence of anthropological and ethnographic discourses within various registers of modernist thought, literature, and visual culture, with special attention to visual and literary primitivism. Our central concerns will include: the attempt to create a modernist aesthetics grounded in ethnography; the primitivist critique of modernity; the place of primitivism in the historical avant-garde; the development of the notion of "culture" in modernity; and the aesthetics of modern ethnic and national identity. &nbsp;Key thinkers, artists, and writers to be considered include Herder; Gauguin; Picasso; Wilhelm Worringen; Carl Einstein; Hannah Höch; and Emil Nolde.
Instructor(s): S. Spinner
Area: Humanities.

AS.212.205. Winter Is Coming: Writing and Rewriting French Dark Ages. 3.0 Credits.
This course will not aim at drawing the exhaustive literary landscape of French Middle Ages, neither will it be a Comparative Literature or History class. It may be considered a gateway to French Medieval literature, given that the Modern Fantasy has obviously improved the last decades, the latter being built as a rewriting of Medieval themes and Western European folklore. Looking at texts originally written in Old French, including prose and poetry, but also at the French Medieval iconography, we will try to understand the old roots of the Modern and so popular (but sacrificing) Fantasy Literature. Basic French will be required.
Instructor(s): M. Alhinho
Area: Humanities.

AS.213.318. The Making of Modern Gender. 3.0 Credits.
Taught in English. Gender as we know it is not timeless. Today, gender roles and the assumption that there are only two genders are diligently contested and debated. With the binary gender system thus perhaps nearing its end, we might wonder if it had a beginning. In fact, the idea that there are two sexes and that they not only assume different roles in society but also exhibit different character traits, has emerged historically around 1800. Early German Romanticism played a seminal role in the making of modern gender and sexuality. For the first time, woman was considered not a lesser version of man, but a different being with a value of her own. The idea of gender complementation emerged, and this idea, in turn, put more pressure than ever on heterosexuality. In this course, we will explore the role of literature and the other arts in the making and unmaking of gender.
Instructor(s): K. Pahl
Area: Humanities
Writing Intensive.

AS.213.321. Bodies and Pleasures. 3.0 Credits.
Taught in English. This course traces a literary history of sexuality from the Middle Ages to contemporary women's writing. We will analyze how sexual pleasure changed over time. In particular, we will discuss what role literature plays in the reproduction and transformation of bodily pleasures. The course explores how the pleasures of bodies are imagined in and through literature, but also whether words are bodies that give pleasure and perhaps even have their own pleasures. Authors discussed will include Boccaccio, Cleland, Rousseau, Schlegel, Kleist, Hoffmann, Novalis, Amin, Büchner, Freud, Rilke, Kafka, Rich, Foucault, Kristeva, Cixous, Giddens, and Winterson.
Instructor(s): K. Pahl
Area: Humanities.

AS.213.616. The Aesthetic Discourse of Modernity.
When, in 1985, Jürgen Habermas published his lectures on The Aesthetic Discourse of Modernity, he pursued a double aim. He offered a critique of French Theory while at the same time providing a foundation for a normative category of modernity in the tradition of Hegel. Curiously there is one subject he does not touch on, though it seems necessary for a sufficient understanding of modernity: the realm of art and literature. This course will develop a critique of Habermas' normative notion of modernity through re-readings of texts by Nietzsche, Benjamin, Horkheimer/Adorno, Derrida, Bataille and Foucault to elaborate an alternative category of aesthetic modernity. Taught in English. Reading knowledge of German and French is not required, but recommended.
Instructor(s): A. Geisenhanslueke
Area: Humanities.
AS.213.666. “To be continued” - Seriality in Literature and Other Media.
Taught in German. By ending with the words “(To be continued)” [“(ist fortzusetzen”), Goethe’s Wilhem Meisters Wanderjahre not only reflects on the open form of the modern novel but also points toward serialized formats of fiction as they emerge in the 19th century due to advances in printing technologies. The publication of fiction in periodical installments in magazines or newspapers brings about the development of new genres (serialized novel/Feuilletonroman) along with specific serial narrative techniques. The cliffhanger e.g. – although invented earlier – becomes a prominent technique to create suspense. The course analyzes seriality with respect to narrative forms and genres across various media (literature, theater, film, TV) from the 19th century to the present. It further discusses serial aesthetics, seriality in structuralist and poststructuralist theory as well as the ambivalent status of seriality in the arts between avantgarde and popular culture. The course material will include: Stifter, Fontane, excerpts from the magazine “Die Gartenlaube”, Wagner, Freud, Kafka, Lévi-Strauss, Deleuze, Eco, Iser, ”The Perils of Pauline” (serial, 1914), “Copypast” (Jon Amiel, 1995), “Twin Peaks” and current US-American TV series.
Instructor(s): E. Strowick
Area: Humanities
Writing Intensive.

AS.213.125. Freshman Seminar: Dangerous Liaisons: Words and Music Through the Ages. 3.0 Credits.
How do music and words interact? Do words have a priority on music or vice versa? Does music need words to be understood and interpreted? Are words filled with meaning by music? A variety of readings and musical examples will be discussed, including genres as diverse as medieval songs, madrigals, Romantic Lieder, opera, the American musical, and contemporary pop music. The seminar will include field trips to the Baltimore Museum of Art, the Meyerhoff Symphony Hall, the Peabody Institute, and the Evergreen Museum and Library. Students will also have the opportunity to attend a live HD broadcast of Mozart’s Don Giovanni from the Metropolitan Opera. No musical skills required; strong doses of curiosity most welcome.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.479. Dante Visits the Afterlife: The Divine Comedy. 3.0 Credits.
Dante’s Divina commedia is the greatest long poem of the Middle Ages; some say the greatest poem of all time. We will study the Commedia critically to find: (1) What it reveals about the worldview of late-medieval Europe; (2) how it works as poetry; (3) its relation to the intellectual cultures of pagan antiquity and Latin (Catholic) Christianity; (4) its presentation of political and social issues; (5) its influence on intellectual history; in Italy and elsewhere; (6) the challenges it presents to modern readers and translators; (7) what it reveals about Dante’s understanding of cosmology, world history and culture. We will read and discuss the Commedia in English, but students will be expected to familiarize themselves with key Italian terms and concepts. Students taking section 02 (for 4 credits) will spend an additional hour working in Italian at a time to be mutually decided upon by students and professor.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

This course investigates how ecological factors inspired storytellers, influenced modes of literary publication, and determined reader responses in Europe before 1700. Students enrolling in section 2 will attend a supplementary one hour session at a time to be mutually decided and complete the work in Italian.
Instructor(s): T. Tower
Area: Humanities
Writing Intensive.

AS.214.479. Magic, Marvel, and Monstrosity in the Renaissance. 3.0 Credits.
Magic, Monstrosity, and Marvels or Wonders call into question what we see and experience: what is reality, what is illusion; what’s natural and what’s supernatural? What’s human and what’s more, or less, than human? During the Renaissance, ideas about the nature of reality were bound up with questions and issues very different from those of our time. With the exact sciences still being invented, the nature of the world was much less hard and fast for Renaissance people than it is for the modern educated person. The literary masterpieces of the Italian Renaissance provide vivid illustrations of the early modern sense of wonder. Foremost among these are the theatrical comedies which Italian authors revived in imitation of the ancients, and the romances, especially Ariosto’s Orlando furioso (1532) and Tasso’s Gerusalemme liberata (1581). These and other works influenced ideas about magical and marvelous phenomena across Europe for centuries to come. Works will be read and discussed in English. Italian majors and graduate students (who should enroll in section 2) will attend a weekly supplemental discussion in Italian and compose their written work in Italian.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.
Although naturally and historically intertwined, music and poetry tended to be described in the early modern period as competing rather than interacting. By looking at both literary and theoretical texts, the seminar aims to explore the ways in which this controversial relation is revealed by the interplay of poetics, rhetoric, and music theory. Reading materials will include classical sources (e.g. Plato, Aristotle, Ps.-Longinus, Quintilian) and their early modern interpretations. Special attention will be given to Torquato Tasso, Giambattista Marino, and Giambattista Doni, whose works will be also discussed in the light of the contemporary development of musical genres (e.g. madrigals, opera). No musical skills required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.640. Film Theory.
The seminar deals with film theory in its history and its current trends. We will examine structuralist, post-structuralist, feminist, Marxist, psycho-analytic and other theoretical approaches to understanding and interpreting the cinematic medium. We will look at several different genres of contemporary films from Italy, France, Spain, and Latin American Film, from auteur-films to independent documentary collectives, animation films to blockbusters. We will invite at least one film theorist and one filmmaker to class during the semester.
Instructor(s): B. Wegenstein
Area: Humanities.

AS.214.684. The Commentary Tradition and the Birth of Literary Scholarship.
The practice of commenting on texts lies at the foundations of what we call today "literary criticism." From the Bible to Dante's Divine Comedy, from Greek and Latin poetry to medieval and Renaissance literary writings, the many questions posed by the commentators have contributed widely to the shaping of the modern notions of reading and interpretation. What do we look for when we read a text? How do we approach it? How does our reading interact with the author's intention? To what extent is the commentator appropriating the author's prerogatives? By exploring a wide range of case studies, the seminar aims to reassess the role of the commentary tradition within the development of literary scholarship and as a genre per se. Some sessions will take place at the Hopkins Special Collections and at the Walters Art Museum, where students will have the opportunity to work on both manuscripts and early prints, and select materials for their presentations.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

Giambattista Vico's Principi di scienza nuova d'intorno alla comune natura delle nazioni (1725, 1730, 1744) was intended to found an "ideal" and "eternal" model of human development, valid for all societies. Vico considered his project both philology and philosophy, and tried to revolutionize thinking about human history as practiced between about 1550 and 1700, by exposing misconceptions behind attempts to square "sacred history" (the presumed historical accuracy of the Bible) with "profane" or non Judeo-Christian concepts of history, both ancient and modern. The culture shock underlying this "old science" stimulated Vico to base philosophical and historical knowledge of mythology on a conception of narration. Recommended Course background: Italian and Latin
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.215.307. Cervantes: Don Quixote and The Exemplary Novels. 3.0 Credits.
In this course we will read the most important narrative works of Miguel de Cervantes, Don Quixote and the Exemplary Novels, works that are widely understood to have changed western literature. We will read both works in the English translation by renowned translator Edith Grossman, who will also visit Hopkins during the semester. Those who wish to receive credit toward the Spanish major will read the books in the original and attend a separate section conducted in Spanish. Those students should enroll in section 2 of the course.
Instructor(s): W. Egginton
Area: Humanities
Writing Intensive.

AS.215.312. The Great Latin American novel according to Carlos Fuentes. 3.0 Credits.
An investigation into the historical development of the great Latin American novel according to Carlos Fuentes new book on the subject. Course includes reading novels by machado de Assis, Garcia Marquez, Carlos Fuentes, Vargas Llosa, Cortazar and Piglia
Instructor(s): S. Castro-Klaren
Area: Humanities.

AS.215.315. Literature of the Great Recession. 3.0 Credits.
The Great Recession—sometimes called the financial crisis or the economic crisis of 2008—brought financial markets to a halt and created significant political turmoil across the North Atlantic. But its impact on culture, and literature especially, has often been ignored. This seminar will travel across Europe, from Dublin to Madrid, from London to Reykjavik in order to examine how literature has registered this most recent economic crisis. We will focus on how crisis is narrated and the ways in which literary works have managed to provide a voice for marginalized social, economic, and political demands.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.353. Women Writing in Latin America: Prose and Poetry by Sor Juana, Mistral, Lisoba, Pizarnik, Castellanos, and other poets. 3.0 Credits.
The first objective of the course is to train students in close reading and analysis of literary texts. The second objective is to read prose and poetry by some of the canonical texts in the Latin American tradition written by women. Taught in English.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.
AS.215.361. A multidisciplinary Introduction to the Study of Latin America. 3.0 Credits.
The course brings together knowledges drawn from the fields of geography, history, anthropology, literature and art in order to provide access to the complexity of "Latin America". Students may opt do the reading in the original Spanish or Portuguese and also write in either language.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.406. Novelist Intellectuals. 3.0 Credits.
What does a novelist’s op-ed about economics have to do with her literary writing? In what ways does a fiction writer’s essays on the environment inform how we read her novels? What happens when we find the political opinions of a writer objectionable? This undergraduate seminar will consider what the Spanish writer Francisco Ayala termed “novelist intellectuals,” that is, literary writers who actively participate in a society’s public sphere. Considering writers from Madrid to New York, from London to Buenos Aires, we will ask how one should hold a novelist’s fictional and non-fictional writings in the balance and explore ways of reading that allow us to consider the public intellectual side and the aesthetic side of a novelist together.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.452. Che Guevara and Magical Realism. 3.0 Credits.
His detractors often compare him to Hitler while many of his admirers see in him a saint and a martyr like Jesus Christ. Cuban school children are taught to be like him. Che was killed in 1967, the same year in which Gabriel García Márquez published Cien años de soledad (One Hundred Years of Solitude). We will study Guevara’s life as a militant revolutionary through his own writings and the exorbitant style known as realismo mágico, crafted by García Márquez, one of Che’s great admirers. Four movies will anchor our visual take on the myth and the man: Los diarios de motocicleta (Walter Salles, 2004), Che I and Che II (Steven Soderbergh, 2008), and Wall Street (Oliver Stone, 1987). The nineteen-eighties narcotraffic boom in Colombia and the cocaine-driven financial high times during the late Reagan years will frame our study. Taught in Spanish.
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.489. Poetry in Latin America: A multilingual survey from 1200 to the present. 3.0 Credits.
The course focuses on a presentation of the multiple traditions of poetry writing that make up the Latin American tradition from the Mexica poets at about 1200 to current writers in Latin America. Original poetry in Nahuatl, Maya-Quiche, Spanish and Portuguese will be read along side translations into English. Attention will be paid to translation theory.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.650. Mexico and the Invention of America.
Departing from O’Gorman, the course will entail a reconsideration of the discursive invention of Mexico-America. Anonymous, Sahagun, Clavijero, Humboldt, Dussel and Alzandua will conform part of the readings. Taught in English
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

This course will focus on the art of writing poetry, the art of reading poetry and the poetics of each of the poets whose work is the textual matter of the course.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

Readings from colonial times to the present from three cultural legacies, Hispanic, English and French. Centered on slavery and its sequels.
Instructor(s): E. Gonzalez.

How should one study contemporary literature and culture? Is “the contemporary” a period in and of itself? Does it require a distinct conceptual approach? This graduate seminar will examine various approaches that have emerged since Michel Foucault called his genealogies a “history of the present.” We will pay special attention to contemporary literature and culture’s most distinguishing feature today: crisis. Considering theories of crisis and “the contemporary” together, the course will explore how living in a time of overlapping crises—economic, political, social, cultural, environmental, and others—affects the way we interpret the world.
Instructor(s): B. Seguin
Area: Humanities.

The course engages close readings of Borges critical essays and some of his fiction in order to establish the points of interpellation that Postmodern theory takes from or shares with Borges’s meditation on the problem of writing.
Instructor(s): S. Castro-Klaren.

Humanities Center
AS.300.113. Freshmen Seminar: Drama and Gender in Shakespeare’s England. 3.0 Credits.
In this seminar we will read male and female authored plays and discuss how they reflect contemporary social expectations in Tudor and Stuart England. Authors include William Shakespeare; Mary Sidney, Countess of Pembroke; Christopher Marlowe; Elizabeth Cary; Ben Jonson; and Mary Sidney, Lady Wroth.
Instructor(s): E. Patton
Area: Humanities.

Comparative Thought and Literature
AS.300.219. A History of Outer Space. 3.0 Credits.
Where did Outer Space come from? This course explores the history of Outer Space from the 18th century to today. In particular, it examines Outer Space as a place constructed by the interaction of political, militaristic, cultural, and scientific discourses. We will examine a wide variety of materials, from Star Trek to The X-Files to War of the Worlds in our quest to construct a history of the Final Frontier. There will be a field trip to the National Air and Space Museum.
Instructor(s): B. Stein
Area: Humanities
Writing Intensive.
Humanities Center

AS.300.283. Nineteenth-Century Science Fiction: Ecology, Utopia, and Catastrophe. 3.0 Credits.
This course will introduce students to some of the key texts of science fiction as the genre emerged during the nineteenth century. We will consider the intellectual contexts for the form’s development in Britain, France, and the United States, as well as its emerging narrative conventions. In particular, we will consider how early sci-fi writers used non-realistic modes to dramatize problems and discoveries were at once real and yet hard to fathom within the parameters of everyday cognition: deep geological time, alternative social arrangements, post-human landscapes. Texts may include H.G. Wells’ The Time Machine, Charlotte Perkins Gilman’s Herland, Samuel Butler’s Erewhon, Edward Bulwer Lytton’s The Coming Race, William Morris’ News from Nowhere, and Jules Verne’s 20,000 Leagues Under the Sea.
Instructor(s): E. Ender
Area: Humanities
Writing Intensive.

Comparative Thought and Literature

AS.300.302. Making Modern Poetry. 3.0 Credits.
Making Modern Poetry will explore the intersection and conversation between literature, art history, and graphic design by examining the rapid global development of poetry, art, and print from 1890 to 1930. We will read canonical modernist poets such as T.S. Eliot and Ezra Pound as well as those less familiar, like Mina Loy and César Moro, considering texts comparatively across national borders and through their relations to other arts. All readings will be in English.
Instructor(s): B. Gillespie
Area: Humanities
Writing Intensive.

AS.300.319. The Modernist Novel: Mann, Woolf, and Joyce. 3.0 Credits.
In this course, we will survey the major works of three of the greatest, most relentless innovators of the twentieth century – Thomas Mann, Virginia Woolf, and James Joyce – who explored and exploded narrative techniques for depicting what Woolf called the “luminous halo” of life.
Instructor(s): Y. Ong
Area: Humanities
Writing Intensive.

AS.300.320. Lover’s Discourse. 3.0 Credits.
Much of what we know about love and desire we owe to fiction’s ability to evoke these experiences. Consider for example that the publication, in Germany, of The Sorrows of Young Werther inspired young men across Europe to dress and behave just like him. We will study in this course a selection of love stories chosen because they break the mold and question their conventions. Taking a critical distance from these tales of seduction, we will examine not only the manifestations and meanings of love, but also the configurations of gender they inspire and reflect. Indeed, just as nowadays film and television represent, as well as mold, our identities as desiring subject, fictions from the eighteenth-century onwards have shaped our current understanding of gendered subjectivities. The readings for this seminar (all available in English) include: Austen, “Persuasion”; Balzac, "The Girl with the Golden Eyes” and "Sarrasine”; Barthes, "Lover’s Discourse”; Goethe, "The Sorrows of Young Werther”; Mann, "Death in Venice”; Rousseau, excerpts from “Julie or The New Heloise”; Sulzer, "A Perfect Waiter”, Winterson, "Written on the Body".
Instructor(s): E. Ender
Area: Humanities.

AS.300.321. Rise of the Modern Short Story. 3.0 Credits.
A comparative tour of examples of short stories from three continents that emerged from earlier narrative forms in the 19th and 20th centuries. Attention will be given to new structural, rhetorical, and thematic concerns including the development of new sub-genres, e.g. fictions of detection, case histories, portraits of the artist, and the adaptation of several stories to newer media [at least 2 of the longer narratives translated to film will be screened]. A detailed syllabus of our readings will be available later in the summer; because there is no anthology that quite fits our needs, all the texts or translations, as well as critical and contextual notes will be supplied in digital forms. Note: there will also be an optional hour for questions & discussion TBA.
Instructor(s): R. Macksey
Area: Humanities
Writing Intensive.

AS.300.323. Shakespeare and Ibsen. 3.0 Credits.
William Shakespeare and Henrik Ibsen are the two most frequently performed playwrights in history, and both have been credited with reinventing drama: Shakespeare for the Elizabethan stage and Ibsen for the modern. In this course we will pair together plays by each author – those that stand in an explicit relation of influence as well as those that share a significant set of concerns – in order to investigate how each takes up and transforms key problems in the literary, political, and philosophical tradition for their own historical moment. Plays to be studied: by Shakespeare, A Midsummer Night’s Dream, Hamlet, Othello, King Lear, The Tempest, A Winter’s Tale; by Ibsen, St. John’s Night, Hedda Gabler, Rosmersholm, The Wild Duck, The Master Builder, When We Dead Awaken.
Instructor(s): L. Lisi
Area: Humanities.

AS.300.329. Literature of the Everyday. 3.0 Credits.
The ordinary, the common, the everyday: why does literary realism consider the experiences of the average individual to be worthy of serious contemplation? In this course, we will read closely a set of novels by Flaubert, Mann, Dickens, Zola, Tolstoy, and Woolf from the period between 1850 and 1950 in which the development of realism reaches its climax. These novels explore the nature of work, family, the body, consciousness, and the changing relation between individual and tradition in modernity. We will situate these novels in their social, historical, and literary contexts, and establish a set of terms for the formal study of the novel as a genre (plot, character, setting, narrative, etc).
Instructor(s): Y. Ong
Area: Humanities
Writing Intensive.
What does it mean to read literature in a global context? How are literary texts that we think of as products of distinct national cultures plugged into larger global systems – even if they seem unaware of it? In this course we’ll consider these questions through sustained readings of major Victorian literary texts such as Bram Stoker’s Dracula (1897) and Charles Dickens’s Great Expectations (1861). We will retrace how these books exercised cultural influence beyond the borders of Great Britain; how networks of trade, tourism, and imperial power brought authors from different cultures into contact with one another; and how Victorian texts have become a part of our culture in unexpected ways. Other primary texts may include Arthur Conan Doyle’s The Sign of Four (1890), the poetry of Romesh Chunder Dutt, and first-hand accounts of Oscar Wilde’s 1882 American lecture tour; critical readings will cover postcolonial theory, media theory, and histories of colonialism and urbanization.

Instructor(s): L. Lisi
Area: Humanities
Writing Intensive.

Comparative Thought and Literature
AS.300.337. The Tragic Tradition. 3.0 Credits.
This course offers a broad survey of tragic drama in the Western tradition, from its origins in ancient Greece to the twentieth century. In weekly lectures and discussion sections, we will study the specific literary features and historical contexts of a range of different works, and trace the continuities and transformations that shape them into a unified tradition. Key questions and themes throughout the semester will include what counts as tragic, the tragedy of social and political conflict, the bearing of tragedy on the meaning and value of life, the antagonistic relation between world and humans, the promises and dangers of tragedy for contemporary culture. Authors to be studied: Sophocles, Euripides, Seneca, Shakespeare, Racine, Goethe, Ibsen, Strindberg, Chekov, Brecht, Pirandello, and Beckett.
Instructor(s): L. Lisi
Area: Humanities.

AS.300.339. Introduction to Comparative Literature. 3.0 Credits.
This course offers an introduction to the history, theory, and praxis of comparative literature. We will read texts from some of the founding figures of the discipline and look at the most recent debates in the field, including translation studies, literary theory, and world literature, among others. Particular attention will be given to the methodologies and problems of studying literatures in different linguistic traditions and the relation between literature and other areas of thought and culture, such as philosophy, art history, and psychoanalysis. Case studies in comparative approaches to literature will provide concrete examples to our discussions.
Instructor(s): L. Lisi
Area: Humanities.

Humanities Center

AS.300.346. Forms of Moral Community: The Contemporary World Novel. 3.0 Credits.
Literary and philosophical imaginations of moral community in the post-WWII period (1950-2001). Texts include: Coetzee, Disgrace; McEwan, Atonement; Achebe, Things Fall Apart; Ishiguro, An Artist of the Floating World; Roy, The God of Small Things; Lessing, The Grass is Singing; Mistry, A Fine Balance; Morrison, Beloved; and essays by Levi, Strawson, Adorno, Murdoch, Beauvoir and Barthes on the deep uncertainty over moral community after the crisis of World War II. Close attention to novelistic style and narrative will inform our study of the philosophical questions that animate these works. What does it means to acknowledge another person’s humanity? Who are the members of a moral community? Why do we hold one another responsible for our actions? How do fundamental moral emotions such as contempt, humiliation, compassion, gratitude, forgiveness, and regret reveal the limits of a moral community? Cross listed with English.
Instructor(s): Y. Ong
Area: Humanities.

Comparative Thought and Literature
AS.300.349. Capitalism and Tragedy: from the 18th Century to Climate Change. 3.0 Credits.
In contemporary discussions of climate change, it is an increasingly prevalent view that capitalism will lead to the destruction of civilization as we know it. The notion that capitalism is hostile to what makes human life worth living, however, is one that stretches back at least to the early eighteenth century. In this class, we will examine key moments in the history of this idea in works of literature, philosophy, and politics, from the birth of bourgeois tragedy in the 1720s, through topics such as imperialism and economic exploitation, to the prospects of our ecological future today. Authors to be studied: George Lillo, Balzac, Dickens, Marx and Engels, Ibsen, Weber, Brecht, Arthur Miller, Steinbeck, Pope Francis, and contemporary fiction, politics and philosophy on climate change.
Instructor(s): L. Lisi
Area: Humanities.

Humanities Center

AS.300.363. Reading Judith Shakespeare: poetry and drama by women writers in Elizabethan England (ca 1558-1650). 3.0 Credits.
Virginia Woolf’s account of the thwarted career of Shakespeare’s hypothetical sister, Judith (in A Room of One’s Own) frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, Mary Wroth, and others. Students will create fictional biographies of “Judith Shakespeare” and her literary accomplishments. Cross listed with English, Theater Arts, Writing Seminars, and WGS.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

AS.300.371. The Modernist Novel: James, Woolf, and Joyce. 3.0 Credits.
The purpose of this course is to survey works by three of the greatest, most relentless innovators of the twentieth century – Henry James, Virginia Woolf, and James Joyce – who explored and exploded narrative techniques for depicting what Woolf called the “luminous halo” of life. Selected works include: “The Beast in the Jungle,” The Portrait of a Lady, Jacob’s Room, Mrs. Dalloway, To the Lighthouse, A Portrait of the Artist as a Young Man, and Ulysses.
Instructor(s): Y. Ong
Area: Humanities.
Comparative Thought and Literature
AS.300.437. Literature and Philosophy of the Everyday. 3.0 Credits.
The ordinary, the common, the everyday: why does literary realism consider the experiences of the average individual to be worthy of serious contemplation? In this course, we will read closely a set of novels by Flaubert, Mann, Dickens, Eliot, Zola, Tolstoy, and Woolf from the period between 1850 and 1950 in which the development of realism reaches its climax. These novels transform the conventions for the representation of lives of lower and middle class subjects, revealing such lives as capable of prompting reflection upon deep and serious questions of human existence. Theoretical and philosophical texts on the everyday by Auerbach, Kierkegaard, Heidegger, Sartre, Beauvoir, Lefebvre, Certeau, and Wittgenstein will accompany our discussions.
Instructor(s): Y. Ong
Area: Humanities.

AS.300.609. Bildungsroman, Vollendungsroman: Novels of Youth and Old Age.
This seminar explores the Vollendungsroman, or novel of age, as a twentieth- and twenty-first-century counterpart to the late eighteenth- and nineteenth-century Bildungsroman that Moretti and others view as the symbolic form of modernity. We will examine how Vollendungsromane broach the relation between subjectivity and "age" (not only in the sense of individual maturity, but also in the sense of historical epoch); how they bring into question traditional conceptions of growth, authority, interiority, body-soul, authenticity, and reconciliation; how they represent alternatives to the modes of moral response and being valorized in the Bildungsroman; and how, in and through their very form, they meditate upon the philosophico-scientific significance of the classic phase of the novel. Selected novels by Goethe, Austen, Brontë, Joyce, Woolf, Coetzee, Ishiguro, and McEwan. Open to qualified undergraduates.
Instructor(s): Y. Ong
Area: Humanities.

Interdepartmental
AS.360.133. Freshman Seminar: Great Books at Hopkins. 3.0 Credits.
Freshman Seminar: Students attend lectures by an interdepartmental group of Hopkins faculty and meet for discussion in smaller seminar groups; each of these seminars is led by one of the course faculty. In lectures, panels, multimedia presentations, and curatorial sessions among the University's rare book holdings, we will explore some of the greatest works of the literary and philosophical traditions in Europe and the Americas. Close reading and intensive writing instruction are hallmarks of this course; authors for Fall 2018 include Homer, Boethius, Machiavelli, Shakespeare, Descartes, Apha Behn, Mary Shelley, Mozart, Douglass, and Woolf.
Instructor(s): E. Patton; E. Refini; S. Weiss; W. Eggington
Area: Humanities
Writing Intensive.

Center for Africana Studies
AS.362.201. African American Poetry and Poetics. 3.0 Credits.
In this course, we will follow the development of black poetry primarily as it has evolved in the United States. Beginning with the first published African American writers of the eighteenth century and ending with several important poets writing and performing today, we will consider the shape of the African American poetic tradition as commonly anthologized and as defined by our own theoretically-informed readings of the assigned literature. Attention will be given to both canonical and neglected literary movements and groups. Readings will include poetry and essays by Frances E.W. Harper, James Weldon Johnson, Langston Hughes, Gwendolyn Brooks, Amiri Baraka, Harryette Mullen, Tracie Morris, and others.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.

AS.362.305. Black Periodical Studies. 3.0 Credits.
This course explores the ways in which nineteenth- and twentieth-century black periodical culture fostered (and, at times, hampered) the literary and cultural production of the African diaspora. Authors will likely include Frederick Douglass, "Ethiop (William J. Wilson);" Frances E.W. Harper, Pauline Hopkins, W.E.B. Du Bois, Marcus Garvey, Jean Toomer, Langston Hughes, Richard Bruce Nugent, and others.
Instructor(s): N. Nurhussein
Area: Humanities
Writing Intensive.

Study of Women, Gender, Sexuality
AS.363.302. Queer Identity?. 3.0 Credits.
What does "queer" mean? And who gets to say? This course examines tensions, ambiguities, and contradictions that have emerged in popular, political, and theoretical discourses over the past 25 years.
Instructor(s): J. Chilton
Area: Humanities, Social and Behavioral Sciences.

AS.363.326. Capitalism and Gender. 3.0 Credits.
This course explores a range of critical work relating capitalism to gender, sex, and sexuality: from theoretical accounts of witchcraft, marriage, and prostitution at the birth of capitalist social relations, to classic feminist debates around housework and reproduction, to contemporary thought on affect, finance, and the global dimensions of women's labor. As a centerpiece to the course we will read sections from Capital, interrogating the place of gender in Marx's text while developing a grasp of its arguments and influence.
Instructor(s): C. Westcott
Area: Humanities
Writing Intensive.

AS.363.445. Reading Judith Shakespeare: Women and Gender in Elizabethan England. 3.0 Credits.
If Shakespeare had a sister who went to London to be a writer, what would she write? Virginia Woolf's account of the thwarted career of Shakespeare's hypothetical sister, Judith, in A Room of One's Own frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, and Mary Wroth. Working within a selected historical context, students will create fictional biographies of "Judith Shakespeare," including her perspective on our identified authors and a sample or description of Judith's own literary accomplishments. Secondary course readings will reflect contemporary economic, political, and religious contexts.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.
Program in Museums and Society
AS.389.329. Author/Canon/Archive. 3.0 Credits.
Why are some literary works from the past reprinted, anthologized, and considered worthy of study, but not others? Why are some works "lost" and some "rediscovered," while others simply fall out of favor? Focusing on nineteenth- and early twentieth-century American literary culture, we will use rare books and archival materials from JHU collections to examine Edgar Allan Poe, Walt Whitman, Emily Dickinson, Stephen Crane, Charles Chesnutt, and Zora Neale Hurston, along with a few authors you've never heard of, in terms of the relationship between authorship, stewardship, and status.
Instructor(s): G. Dean
Area: Humanities, Social and Behavioral Sciences.

AS.389.343. Edgar Allan Poe and His Afterlives. 3.0 Credits.
We will investigate the creative development and iconic afterlife of a canonical American author, Edgar Allan Poe, as a case-study in literary legacy and cultural heritage. What is the lifespan of a literary work, and how do works "stay alive" for later generations? Students will examine rare Poe materials and create a digital exhibition of Poe archives.
Instructor(s): G. Dean
Area: Humanities, Social and Behavioral Sciences.

AS.389.355. Literary Culture in the Nineteenth-Century Library. 3.0 Credits.
What did people actually read in the nineteenth century? What can we learn from their books and magazines? In this class, we read nineteenth-century English and American literary works and examine nineteenth-century literary objects from the collection of the George Peabody Library, to better understand the cultural and material environments within which literary works circulated. Featured writers likely to include Edgar Allan Poe, Charles Dickens, Harriet Beecher Stowe, Emily Dickinson, Mark Twain, Stephen Crane. Several field trips to the Peabody Library throughout the semester.
Instructor(s): G. Dean
Area: Humanities
Writing Intensive.

AS.389.359. Modernist Networks in the Archive. 3.0 Credits.
This class examines three American writers who built important and enduring networks, Ezra Pound, Gertrude Stein, and Langston Hughes. We will investigate the artefactual traces of their networks through recently acquired special collections materials and digital representations, in order to address questions about aesthetics and style, politics and power, race and gender, and what is and is not present in the literary archive.
Instructor(s): G. Dean
Area: Humanities
Writing Intensive.

Film and Media Studies
http://krieger.jhu.edu/film-media/index.html

The Film and Media Studies Program offers a comprehensive education in all aspects of the art, theory, and history of the moving image. We offer courses in both critical studies and filmmaking—including narrative, documentary, experimental film, animation and screenwriting—within a rigorous curriculum designed to foster critical understanding and historical knowledge. Student filmmakers and scholars explore the relationship of film and media to modern cultures, literatures, art, history, and philosophy in a new 20,000 square foot facility that offers an enhanced learning environment as well as all the tools available to professional filmmakers: a large sound stage, a recording studio, computer labs, editing suites, a screening room, classrooms, and state-of-the-art equipment.

Our faculty, comprised of scholars and renowned filmmakers, is known for their dedication to teaching and to promoting a highly collaborative and nurturing environment. Our small size allows us to offer undergraduates an unusual amount of hands-on experience, intensive mentoring, and significant individual attention.

The majority of our students go on to attend graduate film school or to work in the film and media industries directly after graduation. Among our graduates are directors, screenwriters, producers, editors, actors, cinematographers, financial and marketing executives, film scholars and curators, entertainment lawyers, agents, digital technicians, and web designers. Our rapidly growing network of alumni provides graduates with essential support and mentoring, opening doors to a wide range of opportunities in the film and media industry. In addition, our undergraduates avail themselves of generous filmmaking grants and funding opportunities from a range of resources available only to FMS majors and minors.

Requirements for the B.A. Degree
(See also Requirements for a Bachelor’s Degree (p. 7).)

Because the department emphasizes the historical, cultural, and social context of cinema, Film and Media Studies is an excellent program for undergraduates interested in a broadly humanistic education as well as for those preparing for a career in the field. A departmental faculty advisor assigned to each undergraduate major helps plan individual courses of study. Undergraduates are encouraged to participate fully in all departmental activities.

In addition to core required courses, each student must complete either a critical studies or production track for the major. All courses applied toward the major must be taken for a letter grade and a grade of C- or better must be earned. The following courses are required for completion of the film and media studies major. These requirements apply to students entering the Film and Media Studies Program in Fall 2016 and beyond. All production courses must be a JHU course with POS tag FILM-PROD. Students are encouraged to supplement these requirements with electives in the program.

Core Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.061.140</td>
<td>Introduction to Cinema, 1892-1941</td>
<td>3</td>
</tr>
<tr>
<td>AS.061.141</td>
<td>Introduction to Cinema, 1941-present</td>
<td>3</td>
</tr>
<tr>
<td>One writing course:</td>
<td></td>
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</tr>
<tr>
<td>AS.061.226</td>
<td>Special Topics: Writing About Film (preferred)</td>
<td></td>
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<tr>
<td>AS.060.113</td>
<td>Expository Writing</td>
<td></td>
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<tr>
<td>AS.060.114</td>
<td>Expository Writing</td>
<td></td>
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<tr>
<td>AS.060.100</td>
<td>Introduction to Expository Writing</td>
<td></td>
</tr>
<tr>
<td>AS.360.133</td>
<td>Freshman Seminar: Great Books at Hopkins</td>
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</tr>
</tbody>
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Foreign language (two semesters at elements level or demonstrated proficiency equivalent to one year of elements) 6-9

Completion of Critical Studies or Production Track

Critical Studies Track

One (1) of the following introductory production courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>AS.061.150</td>
<td>Introduction to Film Production</td>
</tr>
<tr>
<td>AS.061.145</td>
<td>Introduction to Digital Video Production: Visual Language</td>
</tr>
<tr>
<td>AS.061.152</td>
<td>Introduction to Digital Video Production</td>
</tr>
</tbody>
</table>
Two (2) 200-level critical studies film courses (POS tag FILM-CRITST). Screenwriting courses cannot be applied for this requirement.

Seven (7) 300- or 400-level critical studies film courses (POS tag FILM-CRITST). A maximum of 2 classes outside of Film and Media studies can count toward this requirement. Students are strongly encouraged to take at least one course focusing on cinema outside the United States. Screenwriting courses cannot be applied to this requirement. MI.061 classes cannot count toward this requirement.

<table>
<thead>
<tr>
<th>Production Track</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.061.150</td>
<td>3</td>
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<tr>
<td>AS.061.145</td>
<td>3</td>
</tr>
<tr>
<td>AS.061.152</td>
<td>3</td>
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</tbody>
</table>

One (1) 200-level critical studies film course (POS tag FILM-CRITST). Screenwriting courses cannot be applied to this requirement.

Four (4) 300- or 400-level critical studies film courses (POS tag FILM-CRITST). A maximum of one class outside of Film and Media studies can count toward this requirement. Students are strongly encouraged to take at least one course focusing on cinema outside the United States. Screenwriting courses cannot be applied to this requirement. MI.061 classes cannot count toward this requirement. *Credits from other institutions, whether inside or outside the US, will not be accepted toward completion of the minor.

**Production Track**

<table>
<thead>
<tr>
<th>Production Track</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.061.140</td>
<td>3</td>
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<tr>
<td>or AS.061.144</td>
<td>3</td>
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</tbody>
</table>

One (1) introductory production course:

<table>
<thead>
<tr>
<th>Production Track</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.061.145</td>
<td>3</td>
</tr>
</tbody>
</table>

One (1) intermediate film production course (061.2xx with POS tag FILM-PROD)

<table>
<thead>
<tr>
<th>Production Track</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.061.301</td>
<td>3</td>
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</table>

One (1) Advanced Film Production Course. This will be a 300- to 400-level course with POS tag FILM-PROD. Including but not limited to:

<table>
<thead>
<tr>
<th>Production Track</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.061.356</td>
<td>3</td>
</tr>
<tr>
<td>AS.061.413</td>
<td>3</td>
</tr>
</tbody>
</table>

| Sample Program |
| Sample Program |
| Sample Program |

**Film and Media Studies Minor**

Students pursuing the minor select either the critical studies or production track. All courses applied toward the minor must be taken for a letter grade and a grade of C- or better must be earned. The minor requirements are as follows:

**Critical Studies Track**

<table>
<thead>
<tr>
<th>Critical Studies Track</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.061.140</td>
<td>3</td>
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<tr>
<td>or AS.061.141</td>
<td>3</td>
</tr>
</tbody>
</table>

One (1) of the following introductory production courses:

<table>
<thead>
<tr>
<th>Critical Studies Track</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.061.145</td>
<td>3</td>
</tr>
<tr>
<td>AS.061.150</td>
<td>3</td>
</tr>
<tr>
<td>AS.061.152</td>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Critical Studies Track</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.061.141</td>
<td>3</td>
</tr>
<tr>
<td>AS.061.150, or 061.152</td>
<td>3</td>
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</tbody>
</table>

**Fall**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>AS.061.140</td>
<td>3</td>
<td>AS.061.141</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Critical Studies Track</th>
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</thead>
<tbody>
<tr>
<td>One Expository Writing Class</td>
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<td>3</td>
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<table>
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<tr>
<th>Critical Studies Track</th>
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<tbody>
<tr>
<td>One Foreign Language</td>
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<table>
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<tr>
<th>Critical Studies Track</th>
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<tr>
<td>Sophomore</td>
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<table>
<thead>
<tr>
<th>Critical Studies Track</th>
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</thead>
<tbody>
<tr>
<td>Fall</td>
</tr>
<tr>
<td>Two 200-level Critical Studies Film Courses</td>
</tr>
</tbody>
</table>
## Film and Media Studies

### Junior

#### Fall Credits Spring Credits
Two 300- or 400-level Critical Studies Film Courses 6 Two 300- or 400-level Critical Studies Film Courses 6

#### Senior

#### Fall Credits Spring Credits
One 300- or 400-level Critical Studies Film Courses 3 AS.061.441 Senior Capstone Project: Critical Studies 3

### Total Credits: 48

## Production Track

### Freshman

#### Fall Credits Spring Credits
AS.061.140 Introduction to Cinema, 1892-1941 3 AS.061.141 Introduction to Cinema, 1941-present 3

AS.061.145, Introduction to Digital Media Production: Visual Language 3 AS.061.150, Introduction to 145, or 152 Film Production 3

One Expository Writing Course 3 One Foreign Language 3

One Foreign Language 3

### Sophomore

#### Fall Credits Spring Credits
One 200-level Critical Studies Film Course 3 One 300- or 400-level Critical Studies Film Course 3

One 200- or 300-level Screenwriting Course 3 One Intermediate Film Production or Intermediate Digital Video Production Course 3

### Junior

#### Fall Credits Spring Credits
One 300- or 400-level Critical Studies Film Course 3 One 300- or 400-level Critical Studies Film Course 3

One 300- or 400-level Critical Studies Film Course 3 AS.061.440 Senior Capstone Project: Critical Studies Production 3

### Senior

#### Fall Credits Spring Credits
One 300- or 400-level Critical Studies Film Course 3 AS.061.440 Senior Capstone Project: Critical Studies Production 3

### Total Credits: 48

For current faculty and contact information go to http://krieger.jhu.edu/film-media/directory/

## Faculty

### Director

Meredith Ward

Film theory, media studies, popular culture theory, film history

### Lecturers

Lucy Bucknell

Senior Lecturer: literature and film, film genres, screenwriting, American film

Linda DeLibero

Special Advocate for Alumni and Outreach: film culture and criticism, post-war and contemporary American cinema

John Mann

Senior Lecturer: film production, documentary film theory, experimental film

Laura Mason

Senior Lecturer: history and film, cultural history and media, French film

Matthew Porterfield

Lecturer: film production, screenwriting

Jimmy Joe Roche

Lecturer: digital video production

Karen Yasinsky

Lecturer: stop-motion and drawing animation, experimental film and video, visual theory

### Affiliated Faculty

Anne Eakin Moss

Assistant Professor, Humanities Center

Suzanne Roos

Senior Lecturer; Coordinator, Intermediate French

Richard A. Macksey

Professor Emeritus

For current course information and registration go to https://sis.jhu.edu/classes/

## Courses

**AS.061.105. Freshman Seminar: The Films of 1968. 2.0 Credits.**

1968 was a year of protest and revolution around the globe, and a new audience of youthful cinephiles was hungry for movies that reflected the changing political and cultural landscape. The films of 1968 rose to the challenge, comprising a remarkable document of the times that collectively upended cinematic traditions and old ways of viewing with bold new forms and content. This course examines those cinematic visions—from classics like 2001: A Space Odyssey, Once Upon a Time in the West and Night of the Living Dead to influential groundbreakers like John Cassavetes’ Faces, Jean-Luc Godard’s La Chinoise and Lindsay Anderson’s If . . .—looking closely at individual films and examining both their contemporary contexts and their relevance today. Films will be viewed and discussed in class.

Instructor(s): L. DeLibero

Area: Humanities.
AS.061.140. Introduction to Cinema, 1892-1941. 3.0 Credits.
This course explores the fundamentals of film analysis and encourages students to embark on an exploration of the first half of our first century of movies. It teaches the basic elements of film form, as well as their use in films across the globe from the turn of the twentieth century through the start of World War II. Movements discussed include the silent comedy of Charles Chaplin, Buster Keaton, and Harold Lloyd, moody German Expressionism, the playful anarchy of Surrealism, the fundamentals of editing with Soviet Montage, the beauty of French poetic realism, the rule-breaking of Pre-Production Code cinema, the work of the young Alfred Hitchcock, and, of course, highlights of classical Hollywood filmmaking. Students must attend one screening weekly: either on Friday afternoon or Thursday evening. Lab fee: $50
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

AS.061.141. Introduction to Cinema, 1941-present. 3.0 Credits.
Introduction to Cinema provides an overview of American and international cinema from the post World War II era to the present. Through lectures and discussion, weekly screenings, and intensive visual analysis of individual films, we will explore the aesthetic, cultural, political, and economic forces that have shaped the art and industry of film over the past 70 years. Regular quizzes, writing assignments, class participation required. Mandatory film screenings.
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

AS.061.145. Introduction to Digital Video Production: Visual Language. 3.0 Credits.
This course is a study of the visual language used to create a moving picture. Through screenings and discussion of films, videos, and related readings, students will develop a visual critical facility and will demonstrate this facility in a few response papers to screenings and video projects. The course will focus on image construction, including composition, framing, movement inside the frame and use of light. Students will learn to be attentive to rhythm and tempo in picture editing and sound. In-class video assignments included, in which students will work in small groups of three. Lab fee: $100
Instructor(s): K. Yasinsky
Area: Humanities
Writing Intensive.

AS.061.147. Introduction to Latin American Cinema. 3.0 Credits.
An introductory overview of the evolution of narrative feature filmmaking in Latin America, with an emphasis on comparing and contrasting myriad technical approaches to visual storytelling in different countries and eras. We address form and content, issues of identity, and politics and aesthetics. We will also discuss the influence, effect and dialogue between the films, their historical contexts and among each other. Filmmakers discussed include Cuaron, Martel, Silva, Alonso, Del Toro, Gutiérrez Alea, Reygadas, Salles, Subiela, Babenco, Sorín and Buñuel, among others. Co-listed with Program in Latin American Studies
AS.361.147. Film screenings on T 7:30-10:00 PM are mandatory. $40 lab fee.
Instructor(s): R. Buso-garcia.

AS.061.148. Storytelling for Film and Fiction. 3.0 Credits.
Through the analysis of narrative films, short fiction, myths, fairy tales, and ghost stories, and through the workshopping of their own creative writing, students will explore the art and science of "a good story well told". This course is an essential primer for upper-level screenwriting.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.149. Movies We Love. 3.0 Credits.
Designed for non-majors, this course introduces students to some of the world's great films. Through lectures and screenings scheduled at the Charles Theater or on Homewood campus, faculty from Film and Media Studies and other disciplines will present films they find uniquely significant and explore what makes them great. Lectures will take place in the state-of-the-art screening room at the new Film Center in Station North, a five-minute ride from Homewood on the JHU Shuttle.
Instructor(s): L. DeLibero; L. Mason
Area: Humanities.

AS.061.150. Introduction to Film Production. 3.0 Credits.
This course introduces students to basic considerations of shooting 16mm film. Through lectures and practice, the course approaches the basics of light meter readings, basic camera operations and shot composition. The course also highlights specific readings from classical film theory to augment weekly shooting exercises. Each week students, working in groups, shoot film exercises, providing a general overview of film production. For the final project, each group shoots and edits (physical edits) a short (3-5 minutes) film on 16mm black and white reversal film stock. Lab fee: $200
Instructor(s): M. Porterfield
Area: Humanities.

AS.061.152. Introduction to Digital Video Production. 3.0 Credits.
This course introduces students to the world of digital filmmaking. Through screenings, production assignments, and in-class labs, students will develop proficiency in digital cameras, sound recording devices, and software. Students will work individually and in groups to produce several video projects. For their final projects students will pitch an idea and develop a more complex film. Lab fee: $100
Instructor(s): J. Roche
Area: Humanities.

AS.061.155. Lights, Camera, Action: Hidden Worlds. 1.0 Credit.
This mini-course will explore how cinema makes the invisible visible; how image and audio can reveal not only cultures and practices "invisible" to the mainstream, but also nuance and dimension in a world we only imagine we already see and hear. The camera is itself, in Pater's words, the "sudden light [that] that transfigures a trivial thing." Fiction, nonfiction, and experimental films will be considered. In-class screenings and an emphasis on discussion over lecture. Four short written responses. Perfect attendance required.
Instructor(s): J. Mann; L. Bucknell
Area: Humanities.

AS.061.156. Lights, Camera, Action: On Location. 1.0 Credit.
This mini-course will explore the role of place in film; location not merely as setting, but as character, condition, mode of thought. Real and imagined, found and constructed worlds will be considered. Are all cinematic worlds virtual? In-class screenings and an emphasis on discussion over lecture. This 1-credit course will be graded Pass/Fail. Perfect attendance required. Class meets September 19, 26, October 3, 10.
Instructor(s): J. Mann; L. Bucknell
Area: Humanities.

AS.061.157. Lights, Camera, Action: Hidden Worlds. 1.0 Credit.
This mini-course will explore how cinema makes the invisible visible; how image and audio can reveal not only cultures and practices "invisible" to the mainstream, but also nuance and dimension in a world we only imagine we already see and hear. The camera is itself, in Pater's words, the "sudden light [that] that transfigures a trivial thing." Fiction, nonfiction, and experimental films will be considered. In-class screenings and an emphasis on discussion over lecture. Four short written responses. Perfect attendance required.
Instructor(s): J. Mann; L. Bucknell
Area: Humanities.
AS.061.158. Lights, Camera, Action: David Lynch. 1.0 Credit.
An introduction to the basics of film analysis, through the work of contemporary American film and television director David Lynch. Though essentially cinematic, Lynch's mysterious, dreamlike style, as evidenced by movies like Wild at Heart, Blue Velvet, Mulholland Drive, and Twin Peaks: Fire Walk With Me, invites a multitude of entry points for discourse. Short weekly written responses, in-class screenings, and emphasis on discussion over lecture. No prior experience in film studies required.
Instructor(s): M. Porterfield
Area: Humanities.

AS.061.159. Lights, Camera, Action: Hitchcock. 1.0 Credit.
An introduction to the basics of film analysis, focusing on the work of the "Master of Suspense," Alfred Hitchcock. Short weekly written responses, in-class screenings, and emphasis on discussion over lecture. No prior experience in film studies required. This one-credit course will meet on Sept. 21, Sept. 28, Oct. 5, and Oct. 12 and will be graded pass/fail.
Instructor(s): L. Bucknell, L. DeLibero
Area: Humanities.

AS.061.161. Introduction to Short Film Making. 3.0 Credits.
In this introductory course, students will create short films using digital camera equipment, sound recording devices and the film editing software program, PremierePro. We will watch a variety of films in class; hold readings and discussions based on assigned text, take technical workshops on sound, lighting and hold a short workshop on 16mm film. We will study the history of filmmaking, with a strong focus on the avant-garde and experimental genres. We will also learn about current movements and trends that have developed throughout the world and have the opportunity to meet with Baltimore filmmakers in class. Students will finish the course with a greater understanding of the lineage of cinema and will have learned a range of techniques to create, experiment and develop their own language of visual storytelling. We will discuss, engage, explore and most of all have fun! No prior experience with film or video required.
Instructor(s): M. Rorison
Area: Humanities.

AS.061.163. Lights, Camera, Action: Screwball Comedy. 1.0 Credit.
An introduction to the basics of film analysis through a sampling of Hollywood screwball comedies from the thirties. In-class screenings and short written assignments. Emphasis on discussion over lecture. No prior experience in film studies required. This 1-credit course will meet September 17, 24, October 1 and 8, and be graded pass/fail. Perfect attendance is required.
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.165. Lights, Camera, Action: Horror. 1.0 Credit.
An introduction to the basics of film analysis through a sampling of classic horror. In-class screenings and short written assignments. Emphasis on discussion over lecture. No prior experience in film studies required. This 1-credit course will meet September 16, 23, 30, & October 7, and be graded pass/fail. Perfect attendance is required.
Instructor(s): L. Bucknell.

AS.061.201. Intermediate Video Production: Sound Art for Filmmakers. 3.0 Credits.
David Lynch once said "Films are 50 percent visual and 50 percent sound. Sometimes sound even overlays the visual." This course is dedicated to challenging young filmmakers to conceptualize sound as sculpture and mine the evocative potential of sonic arts. Students will learn and create with a variety of modular synthesizers, digital recorders, and samplers. We will listen to a diverse spectrum of audio content such as musique concrète, plunderphonics, sound collage, and sound design for radio and cinema. Throughout the semester students will create several "imageless films." In the final month of the semester, students will choose one sound project to refine and incorporate moving image. $100 Lab Fee.
Prerequisites: AS.061.150 OR AS.061.152
Instructor(s): J. Roche
Area: Humanities.

AS.061.202. Intermediate Film Production: Personal Essay Film. 3.0 Credits.
In this course students will consider variations of the personal essay film, wherein filmmakers explore their own experiences, both real and imagined. These films constitute dialogues between filmmaker and world using subjective approaches, including but not limited to first person narration. Students will make a short (4-6 minutes) 16mm film from original and possibly archival footage; their own filmic essays based upon personal experiences. We will look at the works of several essay filmmakers including Ross McElwee, Jean Luc Godard, Chris Marker, and Su Friedrich.
Prerequisites: AS.061.150[C]
Instructor(s): J. Mann
Area: Humanities.

AS.061.205. Introduction to Screenwriting. 3.0 Credits.
In this course we will explore the basic principles of visual storytelling in narrative film as they apply to the design and execution of a screenplay. During the course of the semester, each student will work on different writing exercises while they search for their specific story and the best way to approach it. We will study different narrative tools and methods of screenwriting by analyzing films to ascertain how they work or fail to do so at script level. Through in-class critiques, group discussions and one-on-one sessions, students will apply these techniques to their own work as they undergo the process of designing, breaking down, outlining and writing a screenplay for a short film. In-class analysis and debate on the strengths and challenges posed by the students' work will help shape the thematic emphasis of the second half of the course.
Instructor(s): Staff
Area: Humanities
Writing Intensive.

AS.061.211. Intermediate Film Production: First Person/Third Person Essay Film. 3.0 Credits.
Each student shoots an essay film (16mm color and/or black and white) written either in first person or third person, or perhaps, both. The third person essay incorporates the ideas of various authors while the first person film is written chiefly from personal experience. Each film should run between 4-8 minutes. Lab Fee: $200. This course satisfies the Intermediate Film Production requirement.
Prerequisites: AS.061.150
Instructor(s): J. Mann
Area: Humanities.
AS.061.212. Assembling an Idea: The Documentary Process. 3.0 Credits.
A compelling documentary begins with a compelling idea. (The term "documentary," for our purposes, resists categorization.) But by the time that documentary is completed, the initial idea has likely gone through a radical and rigorous exploration. The initial idea may emerge from a sudden thought, a chance encounter. It is the moment when a constellation begins to form. The final driving idea behind a documentary may bear little resemblance to that first thought. We will begin with each of your ideas, perhaps, little more than a vague feeling. The painter, Paul Klee, wrote that "drawing is taking a line for a walk." In this course we will take each of your ideas for a walk, imagining why and how the idea might be realized. The why and the how will involve imaginative thinking, seeking additional ideas that coalesce with that first thought. In this way we begin to assemble the constellation that is your idea. To some degree we are less concerned with the initial idea than the subsequent ideas it suggests. The process may involve archival image research, readings, your own writing, listening to music and sounds, and, sometimes, just letting your idea wander off on its own. Our goal is to experience the growth of an idea into an articulated intention. That intention is then expressed through a plan incorporating visual style, sound design, and, if appropriate, text. There is no production requirement for this course. There is no requirement of film or video experience. You are required to bring with you an idea that has found you. The point of all of this is for each of you to engage, on a deep and thoughtful level, with an idea that has asked for your help.
Instructor(s): J. Mann.

AS.061.213. Screening Difference: Race in American Film. 3.0 Credits.
This course will explore how race and ethnicity have been represented in American film from the early 20th century to the present. Through in-class screenings, open discussion, and short, analytical written responses, students will learn the basics of film analysis and improve their critical thinking skills. No prior experience in film studies required.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.219. Special Topics: Animation Workshop. 3.0 Credits.
Students will produce several animations using hand-made techniques, including drawing animation, paper puppets and stop-motion. Screenings and readings will provide a historical and conceptual context to the exploration of animation as an experimental technique within both narrative and non-narrative works.
Instructor(s): K. Yasinsky
Area: Humanities
Writing Intensive.

AS.061.220. Special Topics: Silent Classics. 3.0 Credits.
A survey of silent era masterpieces. From Murnau’s horror film Nosferatu to Keaton’s slapstick comedy Sherlock Jr to Dreyer’s great tragedy The Passion of Joan of Arc, these are films of exceptional beauty and artistry. Chaplin, Eisenstein, von Sternberg, and others also considered. Recommended course background: AS.061.140 or AS.061.141 or AS.061.145. Lab Fee: $50. Counts toward 200-Level critical studies requirement.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.221. Special Topics: Producing the Independent Film. 3.0 Credits.
This class will guide students through the process of producing an independent film in the United States. The chronology of lectures and coursework will follow the lifeline of a project, from conception through financing and development, production, postproduction, marketing, and exhibition. Students will learn how to package and pitch projects, budget and schedule a screenplay, develop a financing plan, supervise production and post-production, and mount a viable festival and distribution strategy.
Lab Fee: $40
Instructor(s): M. Porterfield.

AS.061.222. Analyzing Popular Culture. 3.0 Credits.
This course provides an introduction to the critical analysis of popular culture through the major theoretical paradigms of media and cultural theory. The teaching method uses a combination of media studies and sociology to explore popular culture and is designed to encourage students to become more active critics. The course presents a range of media from contemporary popular music to film and television. Smaller subjects include the teen "pop" love song, the politics of representation, and the forming of subcultures.
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

AS.061.224. Special Topics: The Business of Film. 3.0 Credits.
Law and economics shape the movie business. This course will survey the legal doctrine and financial concepts of film production and distribution, providing both an overview of one particular industry (i.e., Hollywood) as well as an introduction to fundamental principles applicable to any industry. $40 Lab fee
Instructor(s): L. Meistrich
Area: Humanities.

AS.061.226. Special Topics: Writing About Film. 3.0 Credits.
A workshop that focuses on writing critical and analytical essays about movies recent and classic. Students will write progressively longer and more complex essays—submitting working drafts and making revisions—and participate in critiques and discussions of one another’s writings.
Fulfills Film and Media Studies expository writing requirement. Lab Fee: $50
Instructor(s): L. Mason
Area: Humanities
Writing Intensive.

AS.061.228. Almost Grown. 3.0 Credits.
An introduction to the basics of film analysis through a survey of American coming of age films from the mid 20th century to the present. Attention to questions of race, class, and gender. A variety of genres considered. No prior experience in film studies required. In-class screenings and emphasis on discussion over lecture. Each student will write regular film responses, give an oral presentation, and write a short essay, 8-10pp., with a revision.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.
AS.061.229. French New Wave. 3.0 Credits.
An exploration of the major films and directors of the French New Wave that is also designed to help students consolidate their skills in the analysis of film. The course will examine the origins of the French New Wave, looking at the directors as critics and as passionate film fans, along with the institutional and historical context of the films. It will also ask how the French New Wave changed the process of filmmaking, and transformed the way we think about the work of the director—inspiring more vocations in filmmaking than any other movement in cinema history. Film screenings T 7:30-10:00PM. $40 lab fee.
Instructor(s): S. Roos.

AS.061.231. In Others’ Words: Documentary as Collage. 3.0 Credits.
“In Others Words” explores an enigmatic relationship between images and words. Each student creates a short, 16mm film incorporating their filmed images with texts written by others (fiction and non-fiction). Guided by the notion of collage, these films become a new form of documentary, bringing together seemingly disparate elements to reconfigure our ways of seeing. Drawing from the photo-text works of Wright Morris and C.D.Wright’s poetry, the course adheres to Paul Virilio’s suggestion: “sometimes the best way to see better is to look differently.” This is not about B roll. $125 lab fee.
Prerequisites: AS.061.150

AS.061.232. Intermediate Video: Dreams, Psychosis, and Altered States in Cinema. 3.0 Credits.
In this production course, students will create multiple video projects that reflect the representation of dreams, psychosis, and altered states in cinema. We will screen and deconstruct a variety of feature films, video artworks, and music videos to understand the mechanics and language of subjective realism as a narrative form. We will trace this stylistic lineage from its roots in art house cinema to its rise as an accepted Hollywood modality. We will also explore editing and software techniques that will further students’ ability to create stunning works of strange beauty. Basic proficiency with digital cameras and editing is required. This class fulfills the intermediate film production requirement.
Instructor(s): J. Mann.
Area: Humanities.

AS.061.233. Intermediate Digital Video Production: Adobe After Effects. 3.0 Credits.
This course will serve as an introduction to Adobe After Effects. Students will learn a variety of motion graphics techniques such as digital character animation, rotoscoping, motion tracking, chroma key compositing and automating 3D cameras. Through screenings and discussions students will gain insight into the myriad of ways After Effects is used in Film and Television. Throughout the semester students will complete several short video art projects.
Prerequisites: AS.061.152 OR AS.061.145
Instructor(s): J. Roche
Area: Humanities.

AS.061.234. Intermediate Digital Video Production: Experimental Forms. 3.0 Credits.
This Production course focuses on key movements in both Experimental Film and Video Art. Production assignments will arise from: Structural Film, Performance Art, Lyrical Film, Psychedelic Video, and Experimental Ethnography. Students will explore how these movements developed outside (and at times in opposition to) the mainstream, and became integral to the aesthetics of contemporary art, film, and television. Students will think critically about the personal and societal function that video artwork serves, and gain insight into the history of Experimental Film. At the end of this course, students will have a more nuanced understanding of contemporary media art, and they will be more proficient in video editing and cinematography, which they can apply to future work on: commercials, music videos, webcasts, and feature films.
Prerequisites: AS.061.152 OR AS.061.145
Instructor(s): J. Roche
Area: Humanities.

AS.061.239. Film in the Age of Trump. 3.0 Credits.
As the unprecedented ascendency of Donald Trump has changed the world in record time, so has it changed the way we look at the world. Along with the attendant political and social implications, the rise of Trump has engendered altered perspectives on art and entertainment, posing questions about the power of film in an age of protest. This course will explore how films speak to us differently in this time of political and social upheaval. Through weekly screenings and discussion, a range of JHU faculty will look with fresh eyes at both classic and recent films—from Casablanca to Selma—whose narratives take on new meaning in the age of Trump. In addition, a series of renowned contemporary filmmakers will share their recent work and address how film and filmmaking have changed since the 2016 election. Course requirements are attendance, participation, and 3-4 short response papers. Screening and discussion will take place Wednesdays in in the beautifully restored Parkway Film Center, a historic 1915 movie theater that opens in Station North in spring, 2017. $50 lab fee.
Instructor(s): L. DeLibero.

AS.061.242. Teens On Screen. 3.0 Credits.
This course will explore changing representations of adolescence in films from the 1950s to today across a range of mainstream Hollywood, independent, and international films. We’ll examine how this dynamic and misunderstood genre shapes and reshapes perceptions of youth, and we’ll discuss the frank and sometimes explosive ways teen films address difficult questions of race, class and sexual identity, often in the guise of “pure” entertainment. Recommended Course Background: Introduction to Cinema I or Introduction to Cinema II, or permission of instructor.
Instructor(s): L. DeLibero
Area: Humanities.

AS.061.244. Film Genres. 3.0 Credits.
$40 lab fee A survey of American genres: the Western, the Gangster Film, Science Fiction, Horror, Comedy, Melodrama, and others. Twice-weekly screenings. Short film responses and a final paper, 10pp.
Instructor(s): L. Bucknell
Area: Humanities.
AS.061.245. Introduction to Film Theory. 3.0 Credits.
This course offers an introduction to the major paradigms of film theory, with work ranging from Sergei Eisenstein to Andre Bazin. Frequent film screenings are designed to help illustrate film theory concepts. Designed around one operative question, “What is cinema?” the course explores the varied and divergent answers provided by the great thinkers of the cinema in the past century. Students are expected to enter the course ready to engage in discussion. Film screenings W 7:30-10:00 PM.
Prerequisites: AS.061.140 OR AS.061.141
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

AS.061.248. American Masterpieces. 3.0 Credits.
An introduction to Hollywood cinema and the basics of film analysis through the close reading of selected 20th century American classics including Citizen Kane, On the Waterfront, Annie Hall, and others. Emphasis on discussion over lecture. Several short film responses and an essay with optional revision.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.249. Film History: Sound and Scores. 3.0 Credits.
This course will explore the history of film sound from the silent film era to the present day, examining the narrative and aesthetic purpose as well as the functionality of film music. The course will trace the history and development of film music and the process of film scoring through reading, lecture, and film viewing to explore how music and its relationship to film has changed over the last century. Class includes discussion and evaluation of different compositional styles and their purposes. $40 lab fee.
Instructor(s): H. Robbins; T. Dolby.

AS.061.252. School Daze. 3.0 Credits.
Teen angst and togas in comedies of American youth from The Graduate to Animal House to Lost in Translation. Course will provide an introduction to the basics of film analysis with an emphasis on discussion over lecture. Several short film responses and an essay with optional revision. No prior experience in the subject required.
Instructor(s): L. Bucknell; DeLibero
Area: Humanities
Writing Intensive.

AS.061.263. Poetry and the Moving Image. 3.0 Credits.
Using P. Adams Sitney’s text: The Cinema of Poetry, this course will explore the relationship between poetry and the moving image. When experimental film began to define itself in the 1950s and 60s the terms cine-poem and film-poem were ubiquitous as identifying avant-garde cinema. Poetic structures in the moving image will be studied in relation to language, images and formation of meaning. Students will independently research a poet who greatly inspired and influenced a filmmaker/moving image artist and write on that filmmaker’s work. One moving image project will be undertaken and completed during the semester as well. Weekly assignments will include screenings, reading, writing, and or video work.
Instructor(s): K. Yasinsky
Area: Humanities.

AS.061.264. Acting in Film. 3.0 Credits.
This class is intended for all students of film with the goal of providing them with the experience of acting in film, in both dramatic and comedic roles. The ability of the students as actors is not the focus. Instead they will understand how the writer, director and cinematographer can influence, inhibit or enhance performance. The students will explore practical methods used on set, different approaches to acting and working with directors, writers and crew. It will also include discussions of professional performances and screenings. Students must have strong verbal skills and be prepared to actively and regularly engage in acting exercises, including improvisation and reading aloud.
Instructor(s): K. Beller
Area: Humanities.

AS.061.265. Comedic Storytelling for Page and Screen. 3.0 Credits.
A workshop devoted to the art and science of a funny story well told. Students will analyze comic fiction, film, and classic television, and create their own short, comic works. 220.105, 220.106, or 061.148 recommended. This course satisfies the Film and Media Studies screenwriting requirement.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.270. Writing for the Screen. 3.0 Credits.
An Introduction to dramatic writing for film. Weekly film screenings. Several short, written exercises in story, scene, and character design, and a final complete script for a short film. AS.061.148 Storytelling for Film and Fiction or Introduction to Fiction and Poetry strongly recommended. This course is the equivalent to AS.061.205 Introduction to Dramatic Writing.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.271. 'Inside Station North' TV/Webcast Show. 3.0 Credits.
Students will create a series of short episodes for a TV magazine show about the Station North Arts District surrounding the Film Centre. The pilot for this series was made by students of JHU and MICA in Spring 2016. You will be part of a small crew interviewing its resident artists and musicians, and covering local performances and events. You will get hand-on experience with background research, writing, liaison, shoot planning, operation of camera and sound equipment, and editing. You will also be involved in the marketing of the show, and broadcasting it via the internet or with the help of networks and distribution partners. A number of guest instructors from different professional fields will be on hand to help during classes. [NOTE: much of the activity around this class takes place outside of Friday class hours. There is online correspondence all week about research, planning and editing. You will need to have most of your Fridays completely free, and shoots may run late into the evening. You will need to organize some of your own transportation and food and drink. There are JHU and MICA shuttles to and from Station North; it is a relatively safe neighborhood, and you will generally be in a group, but you need to be aware of the risk of walking around late at night with valuable equipment!] Lab fee: $100
Prerequisites: AS.061.140 OR ( AS.061.141 AND AS.061.152)
Instructor(s): T. Dolby
Area: Humanities
Writing Intensive.
AS.061.301. Advanced Film Production: The mongrel film. 3.0 Credits.
In this course, each student is responsible for the design and production of a short 16mm film. The film may be shot on color and/or black and white negative stock. The format is Super 16mm. The film may include sync and/or non-sync sound. The idea behind the "mongrel" film is for the student to incorporate a variety of genres within this project. These may include stylistic elements typically associated with documentaries, experimental, narrative, animation, and lost and found films. $125 Lab fee
Instructor(s): J. Mann
Area: Humanities.

AS.061.302. Advanced Film Production: The advanced post-production. 3.0 Credits.
This is an advanced production course focusing on artistic influence. Each student will be working with and around a filmmaker who greatly inspires and influences their work. The evolution of style will be considered. The work will include screenings, readings, and short projects all feeding into a final movie. This course fulfills the advanced production requirement. Students should have completed a Introductory and Intermediate Digital Video Production course prior to enrollment. $100 Lab fee.
Instructor(s): K. Yasinsky
Area: Humanities.

AS.061.309. Advanced Video Production: Influence and Anxiety. 3.0 Credits.
This is an advanced production course focusing on artistic influence. In the first half of the semester, students will be presented with prompts from a variety of media photography, literature, popular music, et al. intended to stimulate the imagination and spark ideas. These ideas will be explored, cultivated, and mined for their visual information, with emphasis on information that might appear in their filmic representation. In the second half of the semester, students will search independently for cinematic ideas with an eye toward the details of a scene. As students identify scenic elements, their ideas will be developed and carried through the traditional workflow: outline, scenario, and screenplay. At the end of the semester, students will have prepared short scripts ready for pre-production. Lab fee: $50
Instructor(s): M. Porterfield
Area: Humanities
Writing Intensive.

AS.061.314. Screenwriting: Introduction to Scene. 3.0 Credits.
In the first half of the semester, students will be presented with prompts from a variety of media photography, literature, popular music, et al. intended to stimulate the imagination and spark ideas. These ideas will be explored, cultivated, and mined for their visual information, with emphasis on information that might appear in their filmic representation. In the second half of the semester, students will search independently for cinematic ideas with an eye toward the details of a scene. As students identify scenic elements, their ideas will be developed and carried through the traditional workflow: outline, scenario, and screenplay. At the end of the semester, students will have prepared short scripts ready for pre-production. Lab fee: $50
Instructor(s): M. Porterfield
Area: Humanities
Writing Intensive.

AS.061.316. Characters for the Screenplay. 3.0 Credits.
A workshop devoted to creating complex characters for the screen. Students will examine memorable film characters from the silent era to the present, with attention to how these characters are revealed through the drama and the mise en scene. Weekly screenings. Short critical and creative written exercises and a longer, creative final project. $50 Lab Fee.
Prerequisites: AS.061.148 OR AS.061.270 OR AS.061.205
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.321. Acting and Screenwriting for Narrative Productions. 3.0 Credits.
This pre-production course brings together student filmmakers from Maryland Institute College of Art (MICA) and from Johns Hopkins University (JHU), providing intensive training in the crucial aspects of preparing to shoot a successful narrative film. Students work with a professional screenwriter, allowing students to hone and improve their existing screenplays, practice the elements of writing for film, and learn how to do a script breakdown. Workshops on working with actors, taught by a professional actor, will teach students the ins and outs of casting and directing. Supplemental workshops will cover elements of pre-production such as budgets, production schedules, call sheets, and legal issues. Film screenings will train students to see films as festival curators do, with an eye toward what constitutes exciting, innovative filmmaking. This course is the prelude and prerequisite to Narrative Filmmaking II, a production course during which students will collaborate to shoot a short narrative film based on student screenplays.
Instructor(s): K. Beller
Area: Humanities.

AS.061.322. Women in Popular Film and Television. 3.0 Credits.
A survey of female beauty, villainy, comedy, and humanity in film and television from the silent era to the present. $50 lab fee.
Prerequisites: AS.061.140 OR AS.061.141 or permission of instructor.
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.323. The Westem of Ford, Leone, & Peckinpah. 3.0 Credits.
A study of three masters – John Ford, Sergio Leone, and Sam Peckinpah – their impact on the genre and on each other. Lab fee: $40
Prerequisites: AS.061.140 or AS.061.141 or Permission
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.324. Gangster Films. 3.0 Credits.
The bad guy as hero from Little Caesar to Goodfellas. Film screenings Th 7:30-10:00 PM, Sun 7:00-9:30 PM. Lab fee: $40.
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.325. Monster Films. 3.0 Credits.
$40 and one core course or permission required. Monstrous others and monstrous selves in classic 20th century horror.
Prerequisites: AS.061.140 OR AS.061.141 or permission of instructor is required.
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.336. A Cinema Of Anxiety: Film Noir. 3.0 Credits.
Postwar film noir: Fuller, Huston, Lang, Mann, Tourneur, and others.
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.337. The Wilderness Within and Without. 3.0 Credits.
Monstrous others and monstrous selves in classic 20th century horror.
Prerequisites: AS.061.140 OR AS.061.141 or permission of instructor is required.
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.341. The Westerns of Ford, Leone, & Peckinpah. 3.0 Credits.
Savage landscapes and savage states of mind in films by Ford, Herzog, Boorman, Weir, and others. Lab fee: $50 Counts toward 300 or 400-level critical studies requirement.
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.347. Acting and Screenwriting for Narrative Productions. 3.0 Credits.
A workshop devoted to creating complex characters for the screen. Students will examine memorable film characters from the silent era to the present, with attention to how these characters are revealed through both the drama and the mise en scene. Weekly screenings. Short critical and creative written exercises and a longer, creative final project. $50 Lab Fee.
Prerequisites: AS.061.148 OR AS.061.270 OR AS.061.205
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.
AS.061.352. Media Workshop. 4.0 Credits.
Media Workshop mixes the theory and practice of media-making in a workshop environment that allows upper-level students to hone their craft as filmmakers. Based upon the idea of a creative community, the workshop is an advanced lab designed to give students a place to share ideas, create new work, and receive intensive and supportive critique. Work produced in this class will consist of non-narrative experimental exercises, exploring issues of the image, editing, perception, and sound. Students will read filmmaker-theorists like Sergei Eisenstein, Robert Bresson, Stan Brakhage, Maya Deren and Wim Wenders and will produce creative work inspired by the texts.
Instructor(s): M. Porterfield; M. Ward
Area: Humanities.

AS.061.353. Documentary Film Production. 6.0 Credits.
"7 in the City" is a multimedia journalism project that explores what it is like to be a seven-year-old growing up in Baltimore today. The project is modeled after the legendary British documentary Up series. The goal is to screen and publish the resulting documentaries and articles in partnership with a major media outlet. The class is being taught in partnership with the Hopkins MA in Writing Program. Students in this class will produce short documentaries (4 to 6 minutes) while the writing students will produce a series of articles and in-depth written profiles of seven year olds in different neighborhoods across Baltimore—focusing on public health issues, race, class, educational and economic disparities. With an eye toward documenting the ethics and social justice issues surrounding disparate childhoods in the city, film students will gain hands-on practical experience in filming, editing, and producing a short documentary about a particular 7 year old living in the city. This course counts toward the advanced production requirement for FMS majors and minors in the production track. Students should anticipate extensive work outside of the scheduled class time.
Instructor(s): M. Porterfield
Area: Humanities.

AS.061.356. Narrative Productions. 6.0 Credits.
This course is designed to immerse students in the creative and practical challenges of narrative production. It is our hope that you will emerge with a greater understanding of the professional structure of a film crew, as well as with an understanding of the collaborative creativity necessary to make a narrative short. We will work hard, but if you are interested in video, film and filmmaking, we guarantee you will learn a great deal. In this course students will be divided into teams, each of which will produce a short narrative film based upon a script written by a fellow student. All films will be fully student produced. Students will fill all principal roles: scripting, casting, producing, directing, designing, shooting, sound recording, and editing. Throughout the course, instructors will expose students to relevant films and film professionals in order to illuminate the key creative roles necessary in the making of any film. Instructors will serve a guiding role in the production of student projects, offering technical information and advice. Students will be evaluated not only on the films they produce, but also on their ability to create and contribute to the collaborative art of filmmaking. Lab fee: $100
Prerequisites: Prereq: AS.061.152
Instructor(s): M. Porterfield
Area: Humanities.

AS.061.358. Directing Actors. 3.0 Credits.
This class, intended for students of film, will explore the theory, practice, and ethics of directing actors for the screen. Texts, screenings, production, and performance exercises will be combined over the course of the semester. The goal of this workshop is to inspire young directors and enhance their ability to communicate with their cast with confidence and empathy.
Instructor(s): M. Porterfield
Area: Humanities.

AS.061.361. Documentary Film Theory. 3.0 Credits.
Counts toward 300 or 400-level critical studies requirement.
Instructor(s): J. Mann
Area: Humanities
Writing Intensive.

AS.061.364. The Films of Alfred Hitchcock. 3.0 Credits.
Close examinations of Hitchcock’s films from the Lodger to Frenzy. $40 lab fee.
Instructor(s): L. DeLibero
Area: Humanities
Writing Intensive.

AS.061.365. The New Hollywood: American Films of the Seventies. 3.0 Credits.
This course will explore the extraordinary renaissance in American film that arose from the death of the studio system and ended with the advent of the blockbuster. We’ll discuss how the political and cultural struggles of the Vietnam era affected what came to be called New Hollywood cinema, how classical Hollywood narrative was (or wasn’t) upended by the likes of Altman, Scorsese, Coppola, and Peckinpah; and how the films of this crucial period addressed or failed to address race, class and gender. Lab fee $50.
Instructor(s): L. DeLibero
Area: Humanities
Writing Intensive.

AS.061.369. The 1930s in Jazz, Film, and Poetry. 3.0 Credits.
The 1930s in Jazz, Film, and Poetry will focus on three art forms, jazz, film, and poetry, both separately and in conversation with each other during a decade of political, economic, technological, and cultural upheaval. A decade after the invention of amplifiers and public address systems, advances in sound recording and synchronized sound revolutionized film and recording arts. Jazz musicians, filmmakers, and poets collaborated on innovative and radical projects, often funded by the New Deal Federal Writers Project. Team-taught by faculty in Film and Media Studies, the Department of Jazz (Peabody), and the Center for Africana Studies, this course will bring together students from Peabody and the Krieger School of Arts & Sciences to engage with issues of art, culture, and politics during a turbulent decade.
Prerequisites: AS.061.140 OR AS.061.141
Instructor(s): H. Robbins
Area: Humanities.
AS.061.370. Theorizing Popular Culture. 3.0 Credits.
This course examines popular culture's role in everyday life, tracing its path from its origins to the present. It explores the aesthetics, politics and theory of cinema, television, popular music and internet culture, as well as the study of subcultures and fandom. The endpoint of the experience is to draw students into a more complex and conscious relationship to the mediascape that surrounds them. It also encourages the cultivation of an active practice of cultural critique. Students will debate issues central to a long history of dealing in popular culture, including the potential "dumbing down" of mass culture, the use of artistic formulas in the creation of popular works, the celebration of the popular in the notion of "popular art," representations of race, gender, and sexuality in media, power and the question of the popular, and the basis of taste in media. It will apply it to a range of media as diverse as films, television programs, the punk and "pop" movements, and internet phenomena. A background in writing on media is encouraged. Lab fee: $40
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

AS.061.371. Unrealties: The Fantastic in Film & Fiction. 3.0 Credits.
The fantastic, the absurd, the blackly comic in films by Cocteau, Hitchcock, and others; and in the short fiction of Barthelemy, Cortazar, Hrabal, and others. Several short creative exercises and a longer final project.
Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.372. French Crime Films, Thrillers, and Noirs. 3.0 Credits.
An exploration of French films about crime with a particular focus on the reciprocal relations between French and American cinema: how did the French tradition of poetic realism influence the American film noir—and why is our name for the genre one invented by French critics? How did French directors respond to American genre movies, and to the films of Hitchcock? Screenings will include films by Melville, Godard, Clement, Clouzot, Audiard, and Haneke.
Instructor(s): S. Roos.

AS.061.373. Intermediate Dramatic Writing: Film. 3.0 Credits.
This course will explore different approaches towards understanding the fabric of story as it pertains to film. Students will be exposed to key challenges in conceiving, structuring and executing a compelling, memorable and vibrant feature-length screenplay. By studying key examples, we will discuss possible solutions to these issues. In every class, students will share their work in progress and will help each other find approaches or solutions to their specific challenges and issues. We will analyze films with screenplays that effectively play with the form to create lasting, thought-provoking and affecting stories. Through in-class critiques, group discussions and one-on-one sessions, students will apply new tools and approaches to their own work as they undergo the process of designing, breaking down, outlining and writing a full step outline, a beat sheet and the first ten pages of a feature length screenplay. As the semester progresses, in-class analysis and debate on the strengths and challenges posed by the students' work will shape the thematic emphasis of each class.
Prerequisites: AS.220.204 OR AS.061.205 OR AS.061.270
Instructor(s): R. Buso-garcia
Area: Humanities
Writing Intensive.

AS.061.374. Kubrick/Malick: The Poetics of Space. 3.0 Credits.
Beyond their balding pates, their notorious reclusiveness, and the relative paucity of their output, Stanley Kubrick and Terrence Malick share a mastery of cinematic space. This course will closely examine selected films from their work, with particular emphasis on their visionary manipulation of the epic vastness and lyrical intimacies of screen space. With this primary concern in mind, we will consider the directors' engagement with philosophies of history and time, their experiments with narrative and generic conventions, and their enduring fascination with the relationship between the human and natural worlds. Sunday 7:00pm-9:30pm weekly film screenings. $40 lab fee.
Prerequisites: AS.061.140 OR AS.061.141 OR PERMISSION OF THE INSTRUCTOR.
Instructor(s): L. DeLibero
Writing Intensive.

AS.061.375. Surrealism and Film. 3.0 Credits.
We will define Surrealism through primary texts, including those of Andre Breton, Antonin Artaud and Rene Daumal and other works that defined and influenced the movement in the early part of the 20th century. Using an understanding of the practice of surrealism found in the readings, as well as in surrealist games and automatic writing, we'll study a diverse group of filmmakers influenced by the practice, including Luis Buñuel, Joseph Cornell, Raul Ruiz and contemporary artists such as David Lynch. Assignments include weekly papers and one final creative project. Weekly film screenings Thursday 7:30-10:00 PM. $50 lab fee. Media, Online
Instructor(s): K. Yasinsky.

AS.061.376. Arts and Culture Journalism: Interactive Media, Online Publishing. 3.0 Credits.
Students will participate in the ongoing creation of BmoreArt.com, an online arts and culture publication that serves the Baltimore community. In conjunction with visiting professionals, students will investigate the Baltimore cultural community and create different types of editorial content using interactive media including film, video, sound, and writing. Students will produce creative content utilizing their individual areas of expertise - such as visual art, art history, music, literary arts, film, and theater - while working together as a professional organization. A strong emphasis will be placed on the student's collaborative participation and creative experimentation. Students with differing backgrounds in media will approach this project from unique perspectives, which will be valued and cultivated. Students with previous experience in journalism are welcome. An introductory writing or film course is suggested as a prerequisite.
Instructor(s): C. Ober
Area: Humanities
Writing Intensive.

AS.061.378. Automatic Animation. 3.0 Credits.
A hand-made, 2-D animation course based on ideas of automatism. Students will create their own animated movie during the semester. Readings will include Dada and Surrealist texts, poetry and theory of automatism including Eisenstein, Breton, Descos, P. Adams Sitney and Lyn Hejinian. Weekly film screenings will include animations and experimental films using automatism for image and/or structural generation. Sounds ideas will be discussed and pursued related to the ideas explored throughout the semester. $125 lab fee.
Instructor(s): K. Yasinsky.
AS.061.379. Audio for Video. 3.0 Credits.
This 3-credit, 300-level class covers all creative and technical aspects of working in Logic X and ProTools to create professional soundtracks for film, video, commercials and games. It will enable filmmakers, composers and recording arts students to learn how to import and synchronize QuickTime video; 'spot' a clip; create tempo maps and click tracks, and blend the three key elements of film sound ie dialog, music and effects. Classes will be mainly taught with students at individual workstations, though some classes will be held on the soundstage (for miking and live recording techniques) as well as in the recording studio (dubbing and mixing.) Prerequisites: at least one production course (Intro to Film/Video Production, or Recording Arts); plus fluency in either Logic, ProTools, Final Cut or Premier.
Prerequisites: AS.061.150[C], AS.061.152[C], or other introductory film production course; fluency in either Logi, ProTools, Final Cut or Premier.
Instructor(s): T. Dolby.

AS.061.380. French Cinema of Immigration, Cultural Identity, and Difference. 3.0 Credits.
An exploration of a series of contemporary French films that bear witness to the contemporary reality—crucial to current politics and to the French presidential elections of 2017—of France as a multi-ethnic society and ask essential questions about cultural identity. Is cultural and ethnic identity something that you are born into or is it a role that you elect or perform? How should individuals living today understand their relation to historical injustices? Are there things that we can learn only through relationships with people from other cultures? Screenings include works of Abdellatif Kechiche, Jacques Audiard, Michael Haneke, Mathieu Kassovitz, Claire Denis, the Dardenne. Recommended Course Background: AS.061.140, AS.061.141, or an expository writing course.
Instructor(s): S. Roos
Area: Humanities.

AS.061.381. Sound on Film. 3.0 Credits.
This 3-credit upper-level course will offer undergraduates from both JHU and MICA an unprecedented opportunity to collaborate on all aspects of designing soundtracks for film. Utilizing a combination of pre-existing and in-progress pieces, student filmmakers will create soundtracks, from the initial phases of concept, 'spotting', and 'temping' through to composition and scoring in the final stages of recording, sound syncing and mixing. Students will work in small teams in a lab setting to create their soundtracks, exploring a variety of scenarios, following the post-production process typical of today’s film industry. Lab work will be supplemented by guest lecture presentations on various aspects—practical, theoretical, and historical—of applying sound to film. Guests may include sound designers and engineers, composers, editors, and filmmakers working in live action, animation, and documentaries. At weekly screenings of classic and contemporary cinematic masterpieces students will analyze the evolving art and craft of the film soundtrack, applying the principals in their lab exercises. Lab fee: $50
Instructor(s): T. Dolby
Area: Humanities.

AS.061.388. Cinema Workshop - Cannes Film Festival. 3.0 Credits.
This workshop provides students with access to professional events at the Cannes Film Festival, including screenings, non-competitive programs, tributes, master classes and directors’ showcases. Students are expected to participate in festival events and take an active role in organized discussions, critiques and dialogues. Written and oral assignments. Special Application: Open to JHU Cannes Program participants only.
Instructor(s): L. Mason
Area: Humanities.

AS.061.389. Women Making Movies (Europe). 3.0 Credits.
This course introduces students to some of the most exciting female directors of the 20th century, asking how gender shaped the production and reception of their films. Do particular directors attribute any significance to the fact of being a woman? Does a director’s gender shape her choice of subject or how she represents it? Does wider knowledge of works directed by women change our sense of the canon and authorship? Covers non-U.S. films, strongly encouraged for FMS majors and minors. Cross-listed with WGS. No pre-requisite.
Instructor(s): L. Mason
Area: Humanities.

AS.061.391. Love and Film. 3.0 Credits.
In this course, we explore different understandings of "love" and the way that film has dealt with the concept as a medium. We explore a variety of approaches to the question of "love"—from the apagic to the familial to the romantic—through a series of interdisciplinary readings ranging from philosophy to anthropology. We will also equally explore the question of how film has engaged with the question of love as a concept, and what depictions of human affection—from the general to the personal—it has offered us. Screenings are required for this course. Lab fee: $50
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

AS.061.393. Violent Attractions. 3.0 Credits.
Violence, ritualized and anarchic, celebrated and deplored in popular film from silent era melodrama and slapstick comedy to contemporary sports, crime, and combat films. Twice-weekly screenings; oral presentation; two essays, 6 & 12 pp. Lab fee: $50
Instructor(s): L. Bucknell
Area: Humanities.

AS.061.396. Modern Paris on Film. 3.0 Credits.
This course uses French film to examine the history of twentieth-century Paris. We will consider how filmmakers interpreted the social, political, and technological transformations that shaped Paris in the modern era, treating movies as expressions of change and means by which filmmakers comment on it. Taught in English. $50 lab fee.
Instructor(s): L. Mason
Area: Humanities.

AS.061.397. French Masculinities. 3.0 Credits.
Examines changing ideals of masculinity in France after 1960 as they found expression on film, rooting the work of iconic stars and directors in their cultural, political and historical contexts.
Instructor(s): L. Mason
Area: Humanities
Writing Intensive.

AS.061.399. Stop-Motion Puppet Animation. 3.0 Credits.
Students will create their own stop-motion models (puppets) based on a wire armature model. In small groups, students will design and create a simple set and make a short stop-motion movie using a DSLR camera. The question of "why animate" will be explored in student projects and responses to screenings. We will study the history of stop-motion puppet animation from Starewicz to Svankmajer to Nick Park.
Instructor(s): K. Yasinsky
Area: Humanities.
AS.061.403. Sound on Film II. 3.0 Credits.
This course continues the explorations in sound and music for film begun in AS.061.381. This 3-credit upper-level course, sponsored by the Film and Media Studies Program at JHU and the program in Recording Arts and Sciences at the Peabody Institute, offers undergraduates and faculty/staff from both institutions an unprecedented opportunity to collaborate on all aspects of designing soundtracks for film. Classic and contemporary film scores are screened and analyzed. Then, using their own short films, students from the Film and Media Studies program work with Peabody students to create soundtracks, from the initial phases of 'spotting', composition and scoring, through the interim stages of studio recording and sound syncing, and on to final mixing of music with dialog and sound effects using industry-standard Digidesign ProTools. Students work in small teams in a lab setting to create their soundtracks, exploring a variety of scenarios, including the implications of image-driven music vs music-driven images, and the various uses of acoustic and electronic sound. The course also touches on the logistics of music budget, licensing and copyright. Lab work is supplemented by guest lectures and faculty presentations on various aspects - practical and theoretical - of applying sound to film. Guest lecturers may include sound designers and engineers, composers, editors, and filmmakers working in live action, documentary or animated film. Screenings are provided on Sundays from 7:30-10:00 PM. In order to be admitted to the course, students must have completed at least one 5-10 minute short film to be used for scoring a soundtrack during the semester. $40 lab fee.
Instructor(s): T. Dolby.

AS.061.404. Advanced Screenwriting. 3.0 Credits.
Intensive workshop course where students will write both a first draft and a full revision of a feature length screenplay. Classes will be designed and centered on the specific challenges of the students' works-in-progress, with an emphasis on exploring and discussing different narrative approaches and solutions that will enhance their writing and revision processes. Select films will be screened and analyzed as they pertain to the students' scripts. Students will aim to have a polished draft of their screenplay to be submitted to industry-recognized screenwriting labs at the end of the semester.
Instructor(s): A. Rodgers

Writing Intensive.

AS.061.405. Deep Listening: Sound Studies in Film and Media. 3.0 Credits.
This course explores the sonic elements of film and media studies, and encourages a form of deep and attentive listening in students. Analyzing film, television, music, sound art, and the newer platforms for sound media, it teaches students the tools for sound analysis as well as the basics of sound theory. This course is designed to allow a deeper sonic appreciation of the media created that is created with the ears in mind, even more than the eyes. In this way, it works to "fill in" what is often missing from an education in media studies - a focus on the other sense of the audio-visual media we experience every day. Lab fee: $50 Counts toward 300 or 400-level critical studies requirement.
Prerequisites: AS.061.140 OR AS.061.141
Instructor(s): M. Ward
Area: Humanities.

AS.061.406. Animating Cartoons. 3.0 Credits.
A hand-drawn animation class focusing on the production of a character driven animation. The history of character animations will be studied through screenings and readings, and each student will produce an animation from their original cartoon or comic, or, work on a re-interpretation of an old cartoon animation using rotoscoping. Including in-class animation exercises. Lab fee: $50
Prerequisites: AS.061.219 OR AS.061.378 OR AS.371.140 OR permission of instructor
Instructor(s): K. Yasinsky.

AS.061.409. The Films of P. T. Anderson: Innovation and Influences. 3.0 Credits.
This course will investigate Paul Thomas Anderson's stylistic and narrative innovations, as well as cinematic influences such as Altman, Kubrick, Scorsese, and Welles.
Instructor(s): L. DeLibero
Area: Humanities.

AS.061.413. Lost & Found Film. 3.0 Credits.
This course explores various elements of film production and filmic expression through a somewhat nebulous field typically described as lost films. Lost films (or as they are sometimes called, "orphan" films) can be generally described as films that have, for a variety of reasons, fallen out of the public view. They frequently come from educational, scientific, medical, or industrial films from the 1950s and 1960s. Using these films as source materials, lost film filmmakers explore and expose cultural conventions, visual icons, and historical value materials. Each week, students are responsible for re-editing sources found on an internet archive site. The assignments follow thematic concerns related to film editing. Students complete a final project (4-8 minutes). All editing for the course is accomplished with non-linear software, generally Adobe Premiere or Final Cut.
Instructor(s): J. Mann
Area: Humanities.

AS.061.421. History and Film. 3.0 Credits.
How do films inform, shape, or fundamentally alter our sense of the past? What are the strengths and limitations of cine-history? This course pairs traditional and avant-garde fiction films and documentaries with essays about history, historiography, memory and the political uses of the past to investigate fast-changing relationships between image and text, film and history. Lab fee: $50 Counts toward 300 or 400-level critical studies requirement.
Instructor(s): L. Mason
Area: Humanities
Writing Intensive.

AS.061.440. Senior Capstone Project: Production. 3.0 Credits.
Permission Required. Production track students complete an independent film project.
Prerequisites: AS.061.301 OR AS.061.356
Instructor(s): J. Mann; J. Roche; L. DeLibero; M. Porterfield; M. Ward
Area: Humanities.

AS.061.441. Senior Capstone Project: Critical Studies. 3.0 Credits.
Critical studies track students complete an independent research project.
Instructor(s): L. DeLibero
Area: Humanities.

AS.061.443. Sen Proj-Digital Vid Prd. 3.0 Credits.
Instructor(s): J. Mann; J. Roche; M. Porterfield
Area: Humanities.

AS.061.501. Independent Study - Film. 0.0 - 3.0 Credits.
Instructor(s): Staff.
Cross Listed Courses

AS.060.122. Hollywood and the Culture Industry. 3.0 Credits.
For an average consumer in the first half of the twentieth century, American culture meant Hollywood, and "Hollywood" was something of an insult. Associated with mass produced spectacles of questionable artistic value, the American movie industry played a powerful role in defining "popular culture" as we understand it today. This course will examine how Hollywood contributed to the popularization of cultural production and consumption, and how Hollywood itself was constructed as a cultural icon. What are the myths and tropes that govern Hollywood? How does Hollywood transmit economic, social, national, gender, and racial ideologies? How did Hollywood, in the face of corporate hegemony, still manage to create some of the most enduring cultural artifacts of the twentieth century? The course will begin with readings by Nathanael West and F. Scott Fitzgerald, two authors who worked as screenwriters to support their aspirations as novelists. We will then turn to the crucial influence made by non-American writers on Hollywood, starting with Evelyn Waugh's "The Loved One" about the "British Colony" Waugh discovered during a visit to Southern California. Two weeks will be spent on Frankfurt School theorists of popular culture Theodor Adorno and Max Horkheimer, and the final third of the course will focus on films. We will start by examining three filmmakers whose careers were defined by the "studio system," the oligopoly that controlled American cinema during the so-called "classical era." The course concludes with two weeks devoted to films about Hollywood by notable directors. Classes will be supplemented by relevant secondary scholarship.
Instructor(s): J. Hoffmann
Area: Humanities

AS.060.379. Stage and Screen. 3.0 Credits.
Shakespeare's King Lear has a paradoxical reputation in that it is arguably the greatest drama in English, yet it cannot be performed on stage, at least not without sacrificing its dramatic power. What happens when this notoriously unstageable play is turned into a film, as in Akira Kurosawa's epic masterpiece Ran? Does Kurosawa compensate for the limitations of the stage? What is gained or lost when the drama takes place in Japanese instead of Shakespeare's blank verse? This course will examine the ways that playwrights, theatre producers, and filmmakers manage the dramatic possibilities of text, stage, and cinema. Alongside their cinematic counterparts, we will read tragedies by Shakespeare, Marlowe, and Goethe, eighteenth-century comedies, and modernist dramas, and as a class, we will discuss the often fraught transition between literary text and dramatic spectacle. How do filmmakers convey psychological states through camera techniques and editing that are unavailable to producers of live performances? What dramatic effects can be achieved in the intimate setting of a theatre that are impossible at a twenty-screen cineplex, or on your couch while streaming Netflix? Along with addressing these questions, the course is intended to cultivate active, informed viewership in conjunction with close readings of the plays themselves. Authors likely to be included: Shakespeare - Romeo and Juliet, Hamlet, King Lear; Marlowe - Doctor Faustus; Goethe - Faust; Wycherley - The Country Wife; Congreve - The Way of the World; Samuel Beckett, Tennessee Williams, Arthur Miller, Rabindranath Tagore, Henrik Ibsen. Visual media will include recordings of performances and adaptations by Lawrence Olivier, Kurosawa, Satyajit Ray, Andrei Tarkovsky, Jan Śvankmajer, and Dangerous Liaisons, starring Glenn Close and John Malkovich, plus the broadway musical, Damn Yankees!
Instructor(s): J. Hoffmann
Area: Humanities
Writing Intensive.

AS.061.502. Independent Study: Film & Media. 3.0 Credits.
For students who wish to explore an aspect of film studies not covered by existing courses. The course may be used for research or directed readings/viewings and should include one lengthy essay or several short ones as well as regular meetings with the adviser. Permanently required: Lab Fee: $100 (if production related)
Instructor(s): Staff.

AS.061.503. Independent Study-Film/Media. 0.0 - 3.0 Credits.
Permission required
Instructor(s): J. Mann; J. Roche; L. DeLibero; M. Porterfield.

AS.061.504. Independent Study-Film. 3.0 Credits.
Instructor(s): J. Mann; L. DeLibero; M. Ward.

AS.061.505. Internship-Film/Media. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.061.506. Internship-Film & Media. 1.0 Credit.
Instructor(s): L. Bucknell; L. DeLibero; M. Ward.

AS.061.596. Ind Study - Film & Media. 3.0 Credits.
Instructor(s): Staff.

AS.061.599. Internship-Film & Media. 1.0 Credit.
Instructor(s): Staff.

This course provides students an introduction to the discipline of sound studies and its relationship to three eras of historical forms of technological media. Structured around a problematic of emitter, medium, and receiver, it explores how sound was encoded by its creators as a structure of meaning in early media cultures; how it emerged as a means of aesthetic creation with the rise and dominance of the cinematic medium; and last, how it reaches the infatuated individual listener in the new era of mobile earbud audio. Theorizing our relationship to media through the study of sound and listening, we find new histories to be explored, as well as new media aesthetics to be negotiated. Through engagement with thinkers such as economist Jacques Attali, auditory and cultural historians Emily Thompson and Jonathan Sterne, film sound theorists Michel Chion and Rick Altman, and sound studies scholar Michael Bull, we construct how technologically mediated listening allows us to understand the historical and theoretical components of sound's media aesthetics. Recommended Course Background: AS.061.245 for undergraduates or JHU graduate student status (open to all JHU graduate students).
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

Cross Listed Courses

AS.060.122. Hollywood and the Culture Industry. 3.0 Credits.
For an average consumer in the first half of the twentieth century, American culture meant Hollywood, and "Hollywood" was something of an insult. Associated with mass produced spectacles of questionable artistic value, the American movie industry played a powerful role in defining "popular culture" as we understand it today. This course will examine how Hollywood contributed to the popularization of cultural production and consumption, and how Hollywood itself was constructed as a cultural icon. What are the myths and tropes that govern Hollywood? How does Hollywood transmit economic, social, national, gender, and racial ideologies? How did Hollywood, in the face of corporate hegemony, still manage to create some of the most enduring cultural artifacts of the twentieth century? The course will begin with readings by Nathanael West and F. Scott Fitzgerald, two authors who worked as screenwriters to support their aspirations as novelists. We will then turn to the crucial influence made by non-American writers on Hollywood, starting with Evelyn Waugh's "The Loved One" about the "British Colony" Waugh discovered during a visit to Southern California. Two weeks will be spent on Frankfurt School theorists of popular culture Theodor Adorno and Max Horkheimer, and the final third of the course will focus on films. We will start by examining three filmmakers whose careers were defined by the "studio system," the oligopoly that controlled American cinema during the so-called "classical era." The course concludes with two weeks devoted to films about Hollywood by notable directors. Classes will be supplemented by relevant secondary scholarship.
Instructor(s): J. Hoffmann
Area: Humanities
Anthropology

AS.070.262. Cuban Intellectuals, Cinema, and the State. 3.0 Credits.
This course examines the relationship between intellectuals and the Cuban state, focusing on how cinema and other arts have been mobilized both as propaganda and as sites for social criticism. Screenings are required for this course and will take place on Tuesdays from 7 pm to 9:30 pm. Cross-list: Film and Media Studies, PLAS, Romance Languages.
Instructor(s): L. Humphreys
Area: Humanities, Social and Behavioral Sciences.

AS.070.337. Digital Media, Democracy, and Control. 3.0 Credits.
This course examines how digital technologies enable new publics that circumvent state and social controls as well as how they are mobilized to confirm existing racial, gendered, and political hierarchies.
Instructor(s): L. Humphreys
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.346. Cinema and Ethnography. 3.0 Credits.
Films, like ethnographies, stage encounters with foreign worlds. We will investigate this parallel by examining, side-by-side, cinematic and anthropological representations of subjects like environmental conflict, urban poverty, religious pilgrimage and media culture.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences

History

AS.100.499. Film and Propaganda in Nazi Germany. 3.0 Credits.
By examining a range of cinematic works—from explicitly ideological pseudo-documentaries to entertainment films—this course will explore the transmission of propaganda into the everyday culture of Nazi Germany.
Instructor(s): H. Balz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

German Romance Languages Literatures

AS.211.174. Media of Propaganda. 3.0 Credits.
Today, promoting a particular political or personal point of view is not viewed as "propaganda," but rather as building a community of equally minded people. But where do we draw the line, and when does the use of a medium in service of a certain message become intrusive and misleading? What role do democracy and cultural values play in this use or abuse of media? In this class the term "propaganda" will be evaluated carefully and applied to such historical media case studies as the informational use of the radio in World War One, Leni Riefenstahl's Nazi propaganda films, the legendary success of advertisement campaigns in the 1950s and 1960s, the AIDS movement and other mobilization strategies from the 1980s to the 1990s, and the new values of friendship and propaganda in our current facebook nation.
Instructor(s): B. Wegenstein
Area: Humanities
Writing Intensive.

AS.211.222. Italian Cinema: The classics, the Forgotten and the Emergent. 3.0 Credits.
This course traces the history of Italian cinema from the silent era to the new millennium, highlighting its main trends and genres, and reflecting on the major transformations modern and contemporary Italian society experienced over the twentieth and twentieth-first centuries. We shall examine iconic films such as Vittorio De Sica's Bicycle Thieves, Federico Fellini's La Dolce Vita, Michelangelo Antonioni's L'Avventura, and Pier Paolo Pasolini's Mamma Roma, that received international recognition and influenced other national, cinematic productions. We shall also look at the work of less famous, or independent filmmakers who received less critical attention. While this class takes an historical approach, it also includes a theoretical component and introduces students to the specificity of the cinematic language, examining films in relation to the mise-en-scène, frame composition, camera movements, editing, and sound. This class is taught in English.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.316. Brazilian Cinema and Topics in Contemporary Brazilian Society. 3.0 Credits.
Course is taught in ENGLISH - This course is an introduction to the academic study of cinema as a communicative art and to Brazilian film. The films selected focuses on films from the late 1950s to the present and highlight import episodes and challenges in the advancement of the Brazilian society as well as its cinematic production with a special view to the film aesthetics through analysis from a number of critical perspectives, including class, race, gender as well as ethnicity, nationalism or national identity, colonialism, social changes, and the politics of representation. In this sense, the films and documentaries that we will be watching and studying encompass the period from the rise of New Cinema (Cinema Novo) up to films exploring the most recent trends, including movies launched up to 2016. Students wishing to do the course work in English, for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. THERE IS NO FINAL EXAM. May not be taken on a Satisfactory / Unsatisfactory basis.
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.
AS.211.326. We Conduct - Documentary Production Internship. 3.0 Credits.

To apply for this practicum, you should send an email of motivation to professor Wegenstein at bernadette@jhu.edu. During this internship will accompany Bernadette Wegenstein (director), Shana Hagan (cinematographer), and Judy Karp (sound recordist) on the documentary Márcia and Brasil: Victims of War and Violence. The film profiles the conductors’ incredible dedication, devotion, mentorship, and love for music itself, and highlights the camaraderie and mentorship between generations of female conductors and musicians. Most importantly, it shows their power in pursuing a field not historically welcoming to women, breaking down barriers of gender and race. This documentary feature presents women from different walks of life, including Sylvia Caduff, Marin Alsop, Alexandra Arriechie, Lina Gonzalez, and members of the Baltimore OrchKids afterschool music program for children. The intertwining stories of these women and children, each accompanied by the music they embody, will culminate to reveal their astounding accomplishments as they conduct — the music, and the worlds around them. Filming will take place mainly at the Peabody Conservatory. Some field-trips will be optional (including to foreign destinations). Please note that this class will be held as a practicum, and some of the dates and times will be flexibly adapted to the needs of the artists’ residency. If you have a very full calendar in the Spring it is best advised not to take this class.

Instructor(s): B. Wegenstein
Area: Humanities.

AS.211.330. Curating Media Artists in Residence at JHU. 3.0 Credits.

The students will be closely involved with JHU’s Center for Advanced Media Studies (CAMS directed by Bernadette Wegenstein), and the Baltimore Museum of Art (curator Kristen Hileman) in preparing the BMA Black Box exhibit of Mary and Patrick Kelley’s new film, We Are Ghosts, set in a submarine: the film tells the story of life as experienced by the sailors in a U.S. submarine at the end of the second world war. Artist Mary Reid Kelley focuses on “minor aspects of life” in the submarine during non-combat — such as boredom, claustrophobia, and the effects of heavy drinking on the sailors. Included is also a restaging of Harry Truman’s announcement of the bombing of Hiroshima — told from the sailors’ point of view. While this new work will be on display in the BMA’s Black Box, Kelley’s 2016 film This is Offal (set in a morgue) will be showing at the museum. This film is centered around a dialogue between the ghost of a deceased woman, the victim of a suicide, and her animated organs. Students will also be traveling to Woodstock, NY on a field trip with professor Wegenstein for a studio visit with the artists at the beginning of the semester. Mary Reid Kelley is an artist who makes arresting, playful, and erudite videos that explore the condition of men and women throughout history. Drawing on literary and historical material, the videos involve intensive research and critical reassessments of standard historical narratives. Mary Reid Kelley is involved in every aspect of the videos’ creation—from writing the scripts (typically in highly structured poetic verse), to designing the sets, props, and costumes, to performing the leading roles—and all of the videos are produced by her and her partner, Patrick Kelley, at their private studio. Kelley is known for her feminist videos that recall the theater of the absurd and German Expressionist cinema. Please note that this class will be held as a practicum, and some of the dates and times will be flexibly adapted to the needs of the artists’ residency. If you have a very full calendar in the Spring it is best advised not to take this class.

Instructor(s): B. Wegenstein
Area: Humanities.

AS.211.331. Vagabonds and Ramblers: Space & Place in Women’s Cinema. 3.0 Credits.

In recent times in Italy, a new generation of women filmmakers has found its own space in the traditionally male dominated film industry. This “counter cinema” abounds with female city walkers, migrants, vagabonds and other types of urban nomads, whose movement through space signifies a quest for freedom, gestures of protest and rebellion, and a search for place. We start by looking at the work of a pioneer filmmakers such as Elvira Notari, the first woman director in Italy, and then discuss the issue of gender and space in contemporary films by directors Francesca Comencini, Alice Rohrwacher, and Eleonora Danco. To enrich the analysis, we shall also examine films directed by non-Italians who deal with the theme of women’s mobility and their centrality/marginality from different socio-geographic contexts. Other directors included will be Agnès Varda (France), Chantal Akerman (Belgium), Haifa al-Mansour (Saudi Arabia), and Xiaolu Guo (China) Readings will include essays by Laura Mulvey, Ann E. Kaplan, Linda Williams, and Patricia White.

Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.333. The Holocaust in Film and Literature. 3.0 Credits.

How has the Holocaust been represented in literature and film? Are there special challenges posed by genocide to the traditions of visual and literary representation? Where does the Holocaust fit in to the array of concerns that the visual arts and literature express? And where do art and literature fit in to the commemoration of communal tragedy and the working through of individual trauma entailed by thinking about and representing the Holocaust? These questions will guide our consideration of a range of texts — non-fiction, novels, poetry — in Yiddish, German, English, French and other languages (including works by Primo Levi and Isaac Rabin). As well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Steven Spielberg). All readings in English.

Prerequisites: Cannot be taken by anyone who previously took AS.213.361

Instructor(s): S. Spinner
Area: Humanities.

AS.211.421. Almodóvar Measure for Measure. 3.0 Credits.

A select few films from Spain’s renowned director and top cultural mule. Focus on inter species identities, cyborg antics, mythmaking through the altering of memories and remake of Hollywood studio and post-studio celebrities in the spectrum of perversity.

Instructor(s): E. Gonzalez
Area: Humanities.

AS.211.480. Religious Themes in Film and Literature. 3.0 Credits.

This course would be of interest to anyone who would like to learn about the intersection of religion and modern culture. At the center of the course will stand a close study of the representation of religious themes and their role in modern literature and cinema. The works which we will deal with are not considered religious and yet they include religious themes as part of their narrative, images, language or symbolic meaning. We will trace in various works from various countries and genre, themes such as: divine justice, providence, creation, revelation, the apocalypse, prophecy, sacrifice and religious devotion. We will also study the ways in which Biblical and New Testament stories and figures are represented in these works. The course will have a comparative nature with the aim of learning more about the differences between the literary and cinematic representations.

Instructor(s): N. Stahl
Area: Humanities.
AS.213.305. Contemporary German Film. 3.0 Credits.
After almost a quarter century of neglect, German cinema is on the map again. The many awards German films have been granted over the last 15 years speak to the renaissance of German Cinema since 2000. Among these movies are Florian Henckel von Donnersmarck's The Lives of Others (Academy Award for Best Foreign Language Film, 2006), Caroline Link's Nowhere in Africa (Academy Award for Best Foreign Language Film, 2002), Fatih Akin's Head-On (Golden Bear at the Berlin International Film Festival, 2004; European Film Award 2004), Oliver Hirschbiegel's Downfall (nominated for Academy Award for Best Foreign Language Film, 2004) or Wolfgang Becker's Goodbye, Lenin! (European Film Award, 2003). Nazi Germany, the Stasi, or the Reunification are prominent topics of this internationally acclaimed Contemporary German Cinema. Parallel to these mainstream productions, an aesthetically far more adventurous cinema has developed known as "Berlin School" or "Nouvelle Vague Allemande". Directors associated with the Berlin School are Christian Petzold, Angela Schanelec, Christoph Hochhäusler or Valeska Grisebach. Dissecting the everyday reality of post-wall Germany, this 'counter-cinema' draws on the New German Cinema of the 1970s (among others) to develop radical notions of realism and challenge narrative conventions. This course will give a survey on German Film since 2000 – discussing the historical and cultural context of selected movies as well as analyzing aesthetic strategies and concepts of realism in Contemporary German Cinema. Taught in German.
Instructor(s): E. Strowick
Area: Humanities.

AS.213.330. "What is an Image?" - Technology, Art and Visual Culture around 1900. 3.0 Credits.
Taught in English. This course is an interdisciplinary introduction to the theory of the image with an emphasis on its material and conceptual transformations in the modern period.
Instructor(s): J. Schade
Area: Humanities.

AS.213.349. Weimar Cinema: The Golden Age of German Film. 3.0 Credits.
Taught in German. German cinema of the 1920s is regarded as one of the "golden ages" of world cinema. The course centers on close readings of works which belong to the canon of German film, including The Cabinet of Dr. Caligari, Nosferatu, Metropolis, The Blue Angel, The Last Laugh, and M. Focusing on the question of cinema and modernity, we will discuss topics like modern aesthetics and visual perception; Expressionism in film; technology and the metropolis; the emergence of film genres (e.g. horror film, film noir, science-fiction film, and melodrama). The film analyses will be accompanied by a discussion of the varied scholarly approaches to Weimar Cinema.
Prerequisites: AS.210.361 AND AS.210.362
Instructor(s): E. Strowick.

AS.213.361. The Holocaust in Film and Literature. 3.0 Credits.
How has the Holocaust been represented in literature and film? Are there special challenges posed by genocide to the traditions of visual and literary representation? Where does the Holocaust fit in to the array of concerns that the visual arts and literature express? And where do art and literature fit in to the commemoration of communal tragedy and the working through of individual trauma entailed by thinking about and representing the Holocaust? These questions will guide our consideration of a range of texts – nonfiction, novels, poetry – in Yiddish, German, English, French and other languages (including works by Elie Wiesel, Primo Levi, and Isaac Bashevis Singer), as well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Quentin Tarantino). All readings in English.
Instructor(s): S. Spinner
Area: Humanities.

AS.214.689. Flânerie and Female Authorship in Contemporary Italian Cinema.
This course examines the prolific production of Italian women filmmakers inscribing their work into a national cinematic tradition. The most prominent visual leitmotif in films by directors such as Marina Spada, Francesca Comencini, Alice Rohrwacher and others, is that of the wandering woman contemplating the cityscape. What does the act of walking signify in these works? How do these filmmakers embrace and transform Italy's cinematic tradition? After highlighting the figure of the city-walker in post-war classics by Roberto Rossellini and Vittorio De Sica, we shall discuss from a gender perspective films such as Fellini's Nights of Cabiria, Pasolini's Mamma Roma, and Antonioni's La Notte, which feature female city-walkers who stroll throughout urban peripheries created during the country's rush toward modernity. Then, we shall analyze the work of women directors who recurrently employ the narrative strategy of flânerie to construct female narratives of displacement and liminality. We shall question how and to what extent this contemporary cinematic production is indebted to the masters of neorealism and the auteurs from the sixties. Critical and theoretical readings will include essays by Michel de Certeau, Siegfried Kracauer, Primo Levi, and Isaac Bashevis Singer), as well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Quentin Tarantino). All readings in English.
Instructor(s): L. Di Bianco
Area: Humanities
Writing Intensive.

AS.215.452. Che Guevara and Magical Realism. 3.0 Credits.
His detractors often compare him to Hitler while many of his admirers see in him a saint and a martyr like Jesus Christ. Cuban school children are taught to be like him. Che was killed in 1967, the same year in which Gabriel García Márquez published Cien años de soledad (One Hundred Years of Solitude). We will study Guevara's life as a militant revolutionary through his own writings and the exorbitant style known as realismo mágico, crafted by García Márquez, one of Che's great admirers. Four movies will anchor our visual take on the myth and the man: Los diarios de motocicleta (Walter Salles, 2004), Che I and Che II (Steven Soderbergh, 2008), and Wall Street (Oliver Stone, 1987). The nineteen-eighties narcotrafic boom in Colombia and the cocaine-driven financial high times during the late Reagan years will frame our study. Taught in Spanish.
Instructor(s): E. Gonzalez
Area: Humanities.
AS.216.307. Reflective Mirrors: Israeli and Palestinian Cinema. 3.0 Credits.
Palestinian and Israeli cinemas have emerged side by side, each depicting its Other as a deceiving mirror of its own self. This course will analyze the different images of these Others in both cinemas.
Instructor(s): N. Stahl, Z. Cohen
Area: Humanities
Writing Intensive.

AS.216.398. Zionism: Literature, Film, Thought. 3.0 Credits.
This course studies the relations between modern Hebrew and Israeli culture and Zionism. Based on a close reading of both literary and non-literary Zionist texts, we will explore the thematic, social and political aspects of the Zionist movement. The course focuses on primary sources and its main goal is to familiarize students with the various ways in which Zionism was formed and understood. In the last part of the semester we will investigate the different meanings of Post-Zionism through contemporary literary and non-literary texts as well as recent Israeli films.
Instructor(s): N. Stahl, Z. Cohen
Area: Humanities.

AS.216.412. The Divine in Literature and Cinema. 3.0 Credits.
This course studies various issues concerning literary and cinematic representations of the divine. We will investigate theoretical, theological, generic and aesthetic aspects of the topic and will familiarize ourselves with the general problem of the relation between religion, literature and cinema. Among the topics to be discussed are, negative theology in literature and film, theodicy and anti-theodicy, the question of religion and literary modernism, providence and narratology in the modern novel and in contemporary cinema.
Instructor(s): N. Stahl.

AS.216.444. The Apocalypse in Literature and Film. 3.0 Credits.
"Everything which we loved is lost! We are in a desert" – this emotional assertion was the reaction to Kazimir Malevich's 1915 painting The Black Square, as the artist himself recalled it. This sentiment of fearing, warning and even witnessing the end of the world as we know it, will stand at the center of the course. We will study the literary and cinematic representations of this apocalyptic notion and investigate its theoretical, theological, physiological and aesthetic aspects. We will seek to trace the narrative dynamics as well as literary and cinematic means of apocalyptic representations in works from various periods, languages, cultures and religions. Among the issues to be discussed: what is the apocalypse, biblical apocalypse, dystopia and nostalgia, trauma and post trauma, war and the apocalypse, the Holocaust as the end of civilization, the atomic bomb, realism and anti-realism, political changes and the apocalypse in popular culture.
Instructor(s): N. Stahl
Area: Humanities
Writing Intensive.

Writing Seminars
AS.220.204. Introduction to Dramatic Writing: Film. 3.0 Credits.
Screenwriting workshop. This course will look at the screenplay as both a literary text and blueprint for production. Several classic screenplays will be analyzed. Students will then embark on their own scripts. We will intensively focus on character development, creating "believable" cinematic dialogue, plot development, conflict, pacing, dramatic foreshadowing, the element of surprise, text and subtext, and visual storytelling. Several classic films will be analyzed and discussed (PSYCHO, CHINATOWN, BLADE RUNNER). Students will learn professional screenplay format and write an 8-12 page screenplay that will be read in class and critiqued.
Instructor(s): M. Lapadula
Area: Humanities
Writing Intensive.

AS.220.218. Writers on Film. 3.0 Credits.
An interdisciplinary course focusing on the film writings of poets, novelists, critics, and essayists such as Virginia Woolf, H.D., James Agee, James Baldwin, and Pauline Kael, and films showing the intertitle and screenplay work of writers such as Anita Loos, F. Scott Fitzgerald, William Faulkner, and Jean Cocteau. Participants will write weekly assignments on film from a critical perspective.
Instructor(s): K. Stine
Area: Humanities
Writing Intensive.

AS.220.337. Intermediate Dramatic Writing: Film. 3.0 Credits.
An intensive workshop focusing on methodology: enhancing original characterization, plot development, conflict, story, pacing, dramatic foreshadowing, the element of surprise, text and subtext, act structure, and visual storytelling. Each student is expected to present sections of his/her "screenplay-in-progress" to the class for discussion. The screenplay Chinatown will be used as a basic text.
Instructor(s): R. Buso-garcia
Area: Humanities
Writing Intensive.

AS.220.338. Dramatic Writing: Film. 3.0 Credits.
This course will intensively focus on character development, creating "believable" cinematic dialogue, plot development, conflict, pacing, dramatic foreshadowing, the element of surprise, text and subtext, and visual storytelling. Every student is expected to present sections of his/her "screenplay-in-progress" to the class for discussion. The screenplay Chinatown will be used as a basic text.
Instructor(s): R. Buso-garcia
Area: Humanities
Writing Intensive.

Comparative Thought and Literature
AS.300.312. Imagining Revolution and Utopia. 3.0 Credits.
What form should revolution take, and what should society look like after the revolution? What would happen to the state, family, home, status of women, human interrelations, and everyday life? These questions consumed radicals in 19th century Russia and Europe, and their answers helped to shape the political culture of the 20th century. This course examines theories of revolution and utopia and responses to them in literature, art and film. Primary case study is Russia and the Soviet Union, with a comparative look at influential European works.
Instructor(s): A. Eakin Moss
Area: Humanities
Writing Intensive.

Humanities Center
AS.300.324. Cinema of the 1930s: Communist and Capitalist Fantasies. 3.0 Credits.
Comedy and musical comedy film flourished in the USA during the Great Depression as well as in the USSR during the Stalinist Great Terror. This course will compare films of the era in a variety of genres (musical, epic, Western, drama), examining the intersections between politics and aesthetics as well as the lasting implications of the films themselves in light of theoretical works on film as a medium, ethics and gender.
Instructor(s): A. Eakin Moss
Area: Humanities.
Comparative Thought and Literature
AS.300.353. Present Mirth: Stages of Comedy. 3.0 Credits.
A comparative survey of representational comedies from Aristophanes to Beckett on stage and screen, with some attention to to to the vexed question of theories of comedy [no laughing matter].
Instructor(s): R. Macksey
Area: Humanities
Writing Intensive.

AS.300.399. Cinema and Philosophy. 3.0 Credits.
Do movies have anything to say about philosophical problems? Why is contemporary philosophy so interested in cinema? What are the most productive ways of bringing films and philosophy into conversation? Why is contemporary philosophy so interested in cinema?
Instructor(s): M. McCreary; P. Marrati
Area: Humanities.

East Asian Studies
AS.310.206. Film and Performing Arts in China: 1949–present. 3.0 Credits.
This course explores Chinese film, music, and theater in post-1949 China. Through discussing scholarly works in history, theater, ethnomusicology, and film studies, students will be exposed to interdisciplinary approach to engaging with film, traditional theater (xiqu), instrumental music, and popular music in China, Taiwan, Hong Kong, and Chinese diasporas. We will examine issues including nationalism, cultural hegemony, modernity, invented tradition, cultural policy, class, and gender. Supplemented by case studies, this course is organized around two overarching questions: how does film and performing arts inform us about the social history of China? How is expressive culture utilized in political agendas in the modern China
Instructor(s): P. Tse
Area: Humanities.

Art
AS.371.303. Documentary Photography. 3.0 Credits.
In this course, we will explore different genres of documentary photography including: the fine art document, photojournalism, social documentary photography, the photo essay and photography of propaganda. Field trips offer opportunities to work in the field. Students will work on a semester-long photo-documentary project on a subject of their choice. Camera experience is a plus, but not a prerequisite. Students will be loaned a digital SLR for the semester.
Instructor(s): P. Berger
Area: Humanities.

German and Romance Languages and Literatures

http://grll.jhu.edu/

The Department of German and Romance Languages and Literatures offers graduate and undergraduate courses in the languages, literatures, and cultures of France, Germany, Italy, Portugal, Latin America, and Spain. The language program includes a wide range of courses from introductory through conversation and composition to civilization. The literature program treats all periods of literature from both historical and critical-theoretical perspectives. These courses emphasize the close reading of texts and modern theories of literary criticism, particularly those based on contemporary philosophy, psychoanalysis, anthropology, and linguistics. In addition, an active program of visiting professors and lecturers complements the core program offered by the faculty-in-residence.

Facilities
The Milton S. Eisenhower Library has collections that provide an ample basis for advanced research in the German and Romance languages and literatures. With the Peabody Library of The Johns Hopkins University in Baltimore and the Library of Congress and other libraries in nearby Washington, a variety of excellent research resources are available to students and faculty.

Undergraduate Programs
A major in the department prepares students for teaching language at the elementary level or for graduate work leading to advanced degrees in French, German, Italian, Latin American, Portuguese, or Spanish studies, or in comparative literature. It also provides excellent background for work in fields such as philosophy, history, international affairs, business, law, or medicine. Opportunities are available to study abroad. Students are encouraged to take advantage of these opportunities.

Requirements for the B.A.
Also see Requirements for a Bachelor’s Degree (p. 7).

Currently, the B.A. degree is offered in French, German, Italian, Romance Languages, or Spanish. A candidate for the B.A degree in the Department of German and Romance Languages and Literatures should have a good command of the spoken language of his or her specialization, and a general familiarity with the literature written in that language. Each major requires a minimum of 24 hours (or eight courses) beyond the first two years of language instruction; please see specific details for each individual major below. The department also recommends that majors take courses in other literatures, history, philosophy, and anthropology.

The student who has had four years of German or a Romance language in high school or two years of German or a Romance language in college normally begins the major with Conversation and Composition (provided they have results commensurate with that level on the placement test) and (where offered) the undergraduate survey of literature. It is recommended that any student majoring in German or a Romance language spend at least one semester of junior year taking university courses in the country of study. Study abroad credit transfer is arranged by the student in consultation with the director of undergraduate studies and/or the relevant undergraduate language program director, and the Office of Study Abroad. In the senior year, a major may be permitted to take courses in the department at the graduate level.

A minor in German or one of the Romance languages is available to undergraduate students in any major. Like the various majors, the minors allow students to develop competence in German or a Romance language while receiving grounding in the culture and literature of that language. Five or six courses in the department beyond the first two years of language study are required for each minor option (see below for details).

French (p. 279)
German (p. 280)
Italian (p. 281)
Portuguese (p. 282)
Romance Languages (p. 282)
French Major

The requirements below are for students starting at Hopkins in 2016/17 and later. Current juniors and seniors should refer to archived catalog versions.

All major requirements must be completed with a grade of C or better and may not be taken satisfactory/unsatisfactory. Requirements are:

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.301</td>
<td>Advanced French I: Achieving Accuracy</td>
<td>3</td>
</tr>
<tr>
<td>AS.210.302</td>
<td>Advanced French II: Reaching Fluency</td>
<td>3</td>
</tr>
<tr>
<td>AS.212.333</td>
<td>Introduction à la littérature française</td>
<td>3</td>
</tr>
<tr>
<td>AS.212.334</td>
<td>Introduction à la littérature française II</td>
<td>3</td>
</tr>
<tr>
<td>AS.210.417</td>
<td>Eloquent French (no later than fall of senior year)</td>
<td>3</td>
</tr>
<tr>
<td>AS.212.353</td>
<td>La France Contemporaine</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.212.353</td>
<td>La France Contemporaine</td>
<td>3</td>
</tr>
</tbody>
</table>

Up to one (1) course listed under 210.3xx/4xx may be counted towards the major.

Up to one (1) course listed as 211 "French" may be counted towards the major.

At least one (1) course listed under 212.4xx is required for the major.

Any remaining electives must be 212.3xx/4xx.

**Total Credits**: 30

* No more than one course may be taught in English.

Meeting each semester with the appointed faculty advisor is essential to ensuring a coherent and adequate course of study. Advising holds for majors and minors will only be released once the choice of coursework for the next semester has been discussed in full with the faculty advisor.

As a rule of thumb, majors should make every effort to diversify their course choices in terms of period and approach.

**Note about courses taken in study abroad programs**:

A maximum of two upper-level courses can count toward the minimum requirements for the major under the AS212 prefix. Other courses can count only as additional transfer credits or as the equivalent of either Introduction à la littérature I or Introduction à la littérature II or, in exceptional cases, La France Contemporaine.

Any study abroad course that a student wishes to substitute for a JHU course must be pre-approved by the French Study Abroad Advisor before departure and re-approved by the French Study Abroad Advisor upon return and upon submission of all materials from the course. Because courses for which pre-approval is granted before departure may not in fact be offered, or be offered in a substantially different form, students must keep in close contact with the French Study Abroad Advisor during the initial weeks of the stay to ensure pre-approval for the final academic program.

For further information about study abroad credits, please see the study abroad page on the GRLL website (http://grll.jhu.edu/french/study-abroad).

**Honors in French**

Honors in French will be granted to majors who entered before Fall 2016 whose course work for the French major is completed at a GPA of 3.7 or higher.

For students entering in Fall 2016 or later, qualified majors meeting minimal GPA requirements (3.7 in all French classes) are eligible to complete a four-credit capstone thesis bearing Honors in French. This includes the 1-credit "Thesis Prep" and the 3-credit "Senior Thesis." Note that these courses, usually taken in the Senior year, are in addition to the 10 required three-credit courses.

**Sample 4-year plan**

Students with previous exposure to French must take a web-based language placement test to determine the appropriate course level in which to enroll (Elements, Intermediate, Advanced, or an introductory upper-level course offering in French).

The plan below is conceived as a guideline for students starting with no previous skills or high school coursework in the French language. Beginning the three-tier language sequence in the Fall of the first year of matriculation is strongly recommended so that all major requirements (10 courses, taken at the Advanced 300-level and higher, for a total of 30 credits) can be completed by the senior year. The calendar of study may be accelerated by participation in a summer or semester-long Study Abroad-approved program in a French-speaking county. Note that of the ten courses required for the French major, only one may be a course taught in English (indicated under both the 211 and 212 prefixes with a GRLL-ENGL pos tag).

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.210.101 French Elements I</td>
<td>4</td>
<td>AS.210.102 French Elements II</td>
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<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tr>
<th>Junior</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.301 Advanced French I: Achieving Accuracy</td>
<td>3</td>
<td>AS.210.302 Advanced French II: Reaching Fluency</td>
<td>3</td>
</tr>
<tr>
<td>AS.212.353 La France Contemporaine</td>
<td>3</td>
<td>AS.212.334 Introduction à la littérature française II</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.417 Eloquent French</td>
<td>3</td>
<td>one AS.212.3xx-4xx elective</td>
<td>3</td>
</tr>
<tr>
<td>AS.212.333 Introduction à la littérature française</td>
<td>3</td>
<td>one AS.212.4xx elective</td>
<td>3</td>
</tr>
</tbody>
</table>
French Minor

All minor requirements must be completed with a grade of C or better and may not be taken satisfactory/unsatisfactory. Please see the French Study Abroad page on the GRLL department website for restrictions on study abroad courses for minor credit. Students are expected to consult with either the Director of Undergraduate Studies or the appointed French faculty advisor to review all elective course selections.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.301</td>
<td>Advanced French I: Achieving Accuracy (or</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>equivalent placement)</td>
<td></td>
</tr>
<tr>
<td>AS.210.302</td>
<td>Advanced French II: Reaching Fluency (or</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>equivalent placement)</td>
<td></td>
</tr>
<tr>
<td>AS.212.333</td>
<td>Introduction à la littérature française</td>
<td>3</td>
</tr>
<tr>
<td>AS.212.334</td>
<td>or AS.212.334 Introduction à la littérature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>française II</td>
<td></td>
</tr>
<tr>
<td>AS.210.353</td>
<td>La France Contemporaine</td>
<td>3</td>
</tr>
<tr>
<td>AS.210.417</td>
<td>Eloquent French</td>
<td>3</td>
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</tbody>
</table>

Elective Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.212.3xx-4xx elective taught in French</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>AS.210.3xx-4xx (taught in French) or AS.212.3xx-4xx</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 21

German

German Major

Students are encouraged to declare their intent to major or minor in German in their sophomore year and to make an advising appointment with the Director of Undergraduate Studies to discuss their academic plans, including options for a study abroad semester or year.

Students must complete a minimum of 27 credit hours in German beyond AS.210.262 Intermediate German II.

Majors are required to complete the Advanced German sequence (AS.210.361 Advanced German I: Cultural Topics of the Modern German-speaking World and AS.210.362 Advanced German II: Contemporary Issues in the German Speaking World, which counts for 6 credits and is a prerequisite for upper level 213.xxx seminars taught in German. Of the remaining 21 credit hours, majors choose courses designated as 210.3xx; 211.xxx (with POS-TAG GRLL-GERM) and 213.xxx. A minimum of 12 credits must be completed in German literature, culture and thought in courses designated as 213.xxx. No more than 6 credit hours of translation courses may be used to fulfill major requirements. All major requirements must be completed with a grade of C- or better and may not be taken satisfactory/unsatisfactory.

The department strongly advises its majors to gain a knowledge of a second foreign language.

Major requirements are as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.361</td>
<td>Advanced German I: Cultural Topics of the Modern</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>German-speaking World</td>
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</tr>
<tr>
<td>AS.210.362</td>
<td>Advanced German II: Contemporary Issues in the</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>German Speaking World</td>
<td></td>
</tr>
</tbody>
</table>

12 credits of AS.213.xxx courses 12
9 credits of additional German courses *9

Total Credits 27

* Additional German language above the advanced level and literature, culture and thought courses apply.

Honors in German

The Department of German offers an Honors Program for highly qualified undergraduates. Students must have a minimum GPA of 3.5 to qualify for the program. Students will work on a project in German literature and thought under the guidance of a faculty advisor. The program is completed by a senior essay more comprehensive in scope than a seminar paper. Students interested in the honors program should meet with the Director of Undergraduate Studies no later than the spring semester of their junior year to discuss the requirements and outline the research project to be conducted the following year.

Sample 4-year plan:

The following 4-year plan presents a sample guideline for students starting with no prior knowledge in German. Beyond the completion of the Advanced German sequence, German major requirements stipulate a specific number of credit hours of language (210) and literature, culture, and thought (213) courses but not the completion of particular courses. Hence, the selection of courses suggested below is just a suggestion; students are free to choose other courses and vary the sequence as long as they complete the total number of credit hours and do not exceed the maximum number of credits for courses taught in English. Students with prior knowledge in German must take the departmental placement exam before registering for a German class. It is recommended that they discuss specific arrangements for the completion of their requirements with the DUS.

Freshman

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.161</td>
<td>4 AS.210.162</td>
</tr>
<tr>
<td>German</td>
<td>German</td>
</tr>
<tr>
<td>Elements I</td>
<td>Elements II</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>German elective taught in English</td>
<td>3</td>
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<td></td>
<td>7</td>
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</table>

Sophomore

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.261</td>
<td>3 AS.210.262</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Intermediate</td>
</tr>
<tr>
<td>German I</td>
<td>German II</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>German elective taught in English</td>
<td>3</td>
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<td></td>
<td>6</td>
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</table>

Junior

<table>
<thead>
<tr>
<th>Fall Credits</th>
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<tbody>
<tr>
<td>AS.210.361</td>
<td>3 AS.210.362</td>
</tr>
<tr>
<td>Advanced</td>
<td>Advanced</td>
</tr>
<tr>
<td>German I</td>
<td>German II</td>
</tr>
<tr>
<td>Cultural</td>
<td>Contemporary</td>
</tr>
<tr>
<td>Topics of</td>
<td>Issues in</td>
</tr>
<tr>
<td>the Modern</td>
<td>the German</td>
</tr>
<tr>
<td>German</td>
<td>Speaking World</td>
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<td>speaking</td>
<td>World</td>
</tr>
<tr>
<td>World</td>
<td>3</td>
</tr>
</tbody>
</table>
German Minor

Students are encouraged to declare their intent to major or minor in German in their sophomore year and to make an advising appointment with the Director of Undergraduate Studies to discuss their academic plans, including options for a study abroad semester or year.

Students must complete a minimum of 18 credit hours in German beyond Elementary German (210.161-162) and Intermediate German (210.251-262).

Minors are required to complete the Advanced German sequence (210.361-362), which counts for 6 credits and is a prerequisite for upper-level 213.xxx seminars taught in German. Of the remaining twelve (12) credits, minors choose courses designated as 210.3xx; 211.xxx (with approval) and 213.xxx. A minimum of three (3) credits must be completed in German literature, culture and thought courses designated as 213.xxx. No more than three (3) credits of translation courses may be used to fulfill minor requirements. All minor requirements must be completed with a grade of C- or better and may not be taken satisfactory/unsatisfactory.

| AS.210.3xx course taught in German (or other German elective) | 3 |

Senior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.213.xxx course taught in German</td>
<td>3</td>
<td>AS.213.xxx course taught in German</td>
<td>3</td>
</tr>
<tr>
<td>AS.213.xxx course taught in German</td>
<td>3</td>
<td>AS.213.xxx course taught in German</td>
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<tr>
<td>Total Credits: 41</td>
<td></td>
<td></td>
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</tbody>
</table>

German B.A./M.A. Degree

The department offers highly qualified Hopkins undergraduate students the option to complete a combined degree in five years. Please see the Graduate tab for details.

Italian

Italian Major

Language courses through Intermediate Italian I and II (AS.210.251-252) or equivalent placement as well as Advanced Italian I and II (AS.210.351-352). Two courses (6 credits) from the "Italian Journeys" series, including "Medieval and Early Modern" (AS.214.362) and "Modern and Contemporary" (AS.214.363) Four courses (or the equivalent of 12 credits) from the Italian Culture series (AS.211.200-499) and the Italian Literature series (AS. 214.200-499). May also include one course in Italian film/history/art history (as long as it is approved by the DUS) and one independent study in the senior year (taken after completing an Italian Literature series course). At least two of the four courses (or the equivalent of 6 credits) must be conducted in Italian. All major requirements must be completed with a grade of C- or better and may not be taken satisfactory/unsatisfactory.

<table>
<thead>
<tr>
<th>Required Core Courses</th>
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<tbody>
<tr>
<td>AS.210.351</td>
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<tr>
<td>AS.210.352</td>
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<tr>
<td>AS.214.362</td>
</tr>
<tr>
<td>AS.214.363</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two AS.211.2xx-4xx or AS.214.2xx-4xx taught in Italian</td>
</tr>
<tr>
<td>Two AS.211.2xx-4xx (related to Italian) or AS.214.2xx-4xx taught in English or Italian</td>
</tr>
</tbody>
</table>

Honors in Italian

Students have the opportunity to earn honors in the major by successfully completing an honors senior essay. Italian majors who select this option may enroll, during either fall or spring semester of their senior year, in a for-credit independent study dedicated to the preparation of the honors senior essay.

Sample 4-year plan:
The plan is conceived as a guideline for students starting with no previous skills in Italian language. The sequence of language courses is strongly recommended in order to complete all the requirements for the major by senior year. It is conceivable, though, to postpone Italian Elements to sophomore year. The sequence of courses below is just a suggestion; the sequence can be arranged otherwise as long as (1) the student majoring in Italian takes two courses from the "Italian Journeys" series; and (2) at least two of the remaining four courses are taught in Italian. One independent study in the senior year is acceptable towards the completion of the requirements and is required to graduate with honors in Italian. Students with previous skills in Italian are recommended to take a language placement test and discuss with the DUS specific arrangements for the completion of their requirements.

<table>
<thead>
<tr>
<th>Freshman</th>
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</thead>
<tbody>
<tr>
<td>Fall</td>
</tr>
<tr>
<td>AS.210.151</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
</tr>
<tr>
<td>AS.210.251</td>
</tr>
</tbody>
</table>
### Italian Minor

Language courses through Intermediate Italian I and II (AS.210.251-252) or equivalent placement as well as Advanced Italian I and II (AS.210.351-352). One course (3 credits) from the "Italian Journeys" series, including "Medieval and Early Modern" (AS.214.362) or "Modern and Contemporary" (AS.214.363) Three additional courses (or the equivalent of 9 credits) from the Italian Culture series (AS.211.200-499) and the Italian Literature series (AS.214.200-499). One independent study is acceptable toward the course requirements, provided it is taken after completing a course from the Italian Literature series. At least two of the four courses (or the equivalent of 6 credits) must be conducted in Italian. All major requirements must be completed with a grade of C- or better and may not be taken satisfactory/unsatisfactory.

### Portuguese

The study of Portuguese gives you access to the diverse cultural and literary worlds of Brazil, Portugal and the Portuguese-speaking African and Asian countries. In fact, Portuguese is the third most spoken European language, and the most widely spoken language in South America. Today, there are more than 200 million native Portuguese speakers throughout the world from Angola to Brazil and from Portugal to the distant island nation of East Timor in the Pacific. The Portuguese program in the Department of German and Romance Languages and Literatures offers not only the three levels of language training, but also a growing number of courses on literature as well as the culture and civilization of Brazil. We do not currently offer a major or minor in Portuguese but Portuguese may be used as the third language in the three-language option of the Romance Languages major.

### Romance Languages Major

The Department offers a Romance Languages major in two different configurations: a dual-language option, where the student specializes in two Romance languages, and a three-language option, where the student specializes in three Romance languages. Students interested in pursuing a Romance Languages major should get in touch with the Directors of Undergraduate Studies for each language. Students majoring in Romance Languages will be assigned an advisor for each relevant language, including a primary advisor in their main field of specialization.

### Sample 4-year plan (dual languages - Spanish and Italian)

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.111</td>
<td>Spanish Elements I</td>
<td>4</td>
<td>AS.210.112</td>
<td>Spanish Elements II</td>
</tr>
<tr>
<td>AS.210.151</td>
<td>Italian Elements I</td>
<td>4</td>
<td>AS.210.152</td>
<td>Italian Elements II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.210.211</td>
<td>Intermediate Spanish I</td>
<td>3</td>
<td>AS.210.212</td>
<td>Intermediate Spanish II</td>
</tr>
<tr>
<td>AS.210.251</td>
<td>Intermediate Italian I</td>
<td>3</td>
<td>AS.210.252</td>
<td>Intermediate Italian II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
### Three Language Options

Students must complete the requirements of two languages (French, Italian, or Spanish) as described in the Languages 1 and 2 section and also complete the requirements of an additional language (French, Italian, Portuguese, or Spanish) as described in the Language 3 section. Students must also take the capstone course, AS.211.400 Topics in Romance Literatures.

### Languages 1 and 2

#### French
- AS.210.301 Advanced French I: Achieving Accuracy 3
- AS.210.302 Advanced French II: Reaching Fluency 3
- AS.212.333 Introduction à la littérature française 3
  - or AS.212.334 Introduction à la littérature française II

Two French courses from the AS.212.3xx-4xx series, at least one of which must be at the 400 level 6

Total Credits 12

#### Spanish
- AS.210.311 Advanced Spanish I 3
- AS.210.312 Advanced Spanish II 3
- AS.215.231 Introduction to Literature in Spanish 3

Two Spanish courses from the AS.211.3xx-4xx or AS.215.3xx-4xx series 6

Total Credits 12

#### Italian
- AS.210.351 Advanced Italian I 3
- AS.210.352 Advanced Italian II 3
- AS.214.362 Italian Journeys: Medieval and Early Modern 3
  - or AS.214.363 Italian Journeys: Modern and Contemporary Green Literature

Two Italian courses from the AS.211.3xx-4xx or AS.214.3xx-4xx series 6

Total Credits 12

### Language 3

The student must satisfy their third language requirement as described below:

#### French
- AS.210.301 Advanced French I: Achieving Accuracy 3
- AS.210.302 Advanced French II: Reaching Fluency 3
- AS.212.333 Introduction à la littérature française 3
  - or AS.212.334 Introduction à la littérature française II

One French course from the AS.212.3xx-4xx series 3

Total Credits 12

#### Spanish
- AS.210.311 Advanced Spanish I 3
- AS.210.312 Advanced Spanish II 3
- AS.215.231 Introduction to Literature in Spanish 3

One Spanish course from the AS.215.3xx-4xx series 3

Total Credits 12

#### Italian
- AS.210.351 Advanced Italian I 3
- AS.210.352 Advanced Italian II 3
- AS.214.362 Italian Journeys: Medieval and Early Modern 3
  - or AS.214.363 Italian Journeys: Modern and Contemporary Green Literature

One Italian course from the AS.214.3xx-4xx series 3

Total Credits 12

#### Portuguese
- AS.210.391 Advanced Portuguese Language & Literature I 3
- AS.210.392 Advanced Portuguese Language & Literature II 3
- AS.211.394 Brazilian Culture & Civilization 3

One Portuguese course from the AS.210.3xx or AS.211.3xx series 3

Total Credits 12

### Spanish

Student need to have received a B- or better in AS.210.212 Intermediate Spanish II to proceed into a Spanish major or minor.

### Spanish Major

All major requirements must be completed with a grade of C- or better and may not be taken satisfactory/unsatisfactory.

#### Core Requirements
- AS.210.311 Advanced Spanish I 3
  - or one course from the AS.215.3xx-4xx series if AS.210.311 waived with placement score
- AS.210.312 Advanced Spanish II 3
  - or AS.210.317 Adv Spanish Composition
or one course from the AS. 215.3xx-4xx series if AS.210.312 waived with placement score

AS.215.231 Introduction to Literature in Spanish 3

Five Additional Electives

Choose one from the following list:

AS.210.413 Curso de Perfeccionamiento
AS.211.380 Modern Latin American Culture
AS.211.390 Modern Spanish Culture

With department approval, one course about Latin America or Spain taken in another department (or AS.215.2xx-4xx course)

Four courses from the 215.2xx-4xx series, distributed between the cultures and literatures of Spain and Latin America.

Total Credits 24

* Prerequisites through AS.210.312 may be satisfied by taking a placement examination. Native speakers should consult with the department. Any language requirement waived by exam must be documented on the transcript before the end of the sophomore year.

Spanish Study Abroad

It is strongly recommended that majors spend one semester abroad and/or attend summer or intersession programs. Currently, the department offers a fall program in Madrid, Spain, as well as the Argentina and Peru summer programs organized by the Program in Latin American Studies. Students are expected to consult with the Director of Undergraduate Studies, their department advisor, and the Office of Study Abroad prior to studying abroad. With the approval of the Director of Undergraduate Studies, up to two (2) Spanish courses taken abroad in non-JHU programs or at another institution may be used toward the major.

Sample 4-year plan

This plan assumes the student is starting at the beginning level of the language.

Freshman

Fall Credits Spring Credits
AS.210.111 Spanish Elements I 4 AS.210.112 Spanish Elements II 4

Sophomore

Fall Credits Spring Credits
AS.210.211 Intermediate Spanish I 3 AS.210.212 Intermediate Spanish II 3

Junior

Fall Credits Spring Credits
AS.210.311 Advanced Spanish I 3 AS.210.312 Advanced or 317 Spanish II 3
Spanish elective #1 3

Senior

Fall Credits Spring Credits
AS.215.231 Introduction to Literature in Spanish 3 Spanish elective #4 3
Spanish elective #2 3 Spanish elective #5 3

Total Credits: 38

Spanish Minor

Students may choose one of these two specialized minors: Spanish for the Professions or Spanish Language and Hispanic Cultures. It is also recommended that Spanish minors study abroad for a semester, a summer, or an intersession. With the approval of the Director of the Spanish Language Program, only two Spanish language courses taken abroad (in programs other than Johns Hopkins programs) or at another accredited institution may be applied toward the minor, and only one additional Spanish language course will be approved for credit (but this course will not count toward the minor). For both minors, all minor requirements must be completed with a grade of C- or better and may not be taken satisfactory/unsatisfactory.

Spanish for the Professions Minor

AS.210.311 Advanced Spanish I 3
AS.210.312 Advanced Spanish II
or AS.210.316 Conversational Spanish
or AS.210.317 Adv Spanish Composition
AS.210.313 Medical Spanish
or AS.210.314 Spanish for International Commerce
or AS.210.315 Spanish for International Relations
AS.210.411 Translation for the Professions 3
AS.210.412 Community Based Learning - Spanish Language Practicum 3
AS.210.413 Curso de Perfeccionamiento
or AS.211.380 Modern Latin American Culture
or AS.211.390 Modern Spanish Culture
or any course, taught in Spanish, from the AS.211.3xx, AS.211.4xx, or AS.215.200-400 Spanish Literature series

Total Credits 18

* If a waiver was provided for AS.210.311, students must take one Spanish course from the following: AS.210.4xx or AS.211.xxx or AS.215.2xx-4xx series.

Spanish Language and Hispanic Cultures Minor

AS.210.311 Advanced Spanish I 3
AS.210.312 Advanced Spanish II
or AS.210.317 Adv Spanish Composition
AS.215.231 Introduction to Literature in Spanish
AS.210.413 Curso de Perfeccionamiento
or AS.211.380 Modern Latin American Culture
or AS.211.390 Modern Spanish Culture
or any course, taught in Spanish, from the AS.211.3xx, AS.211.4xx, or AS.215.200-400 Spanish Literature series

One course from the AS.215.2xx-4xx series 3
One course from the AS.215.3xx-4xx series 3

Total Credits 18

* If a waiver was provided for Advanced Spanish I, students must take one Spanish course from the following: AS.210.316 Conversational Spanish, AS.210.4xx or AS.211.xxx or AS.215.2xx-4xx series.
** If a waiver was provided for Advanced Spanish II, students must take one Spanish course from the following: AS.210.317 Advanced Spanish Composition or AS.215.2xx-4xx series.

Study Abroad in Madrid, Spain
The Department offers the following courses as part of the study abroad program in Madrid, Spain (Universidad Carlos 3):

215.340 Modern Spanish Literature
This course covers some representative Spanish literary works of the 20th century, and is divided into four sections: pre-Civil War texts (1900–1939), post-Civil War texts (1939–1975), the literature of the Transition (1975–1982), and contemporary literature (1982–2008). Ramón de Valle-Inclán, Miguel de Unamuno, Federico García Lorca, Antonio Buero Vallejo and Adelaida García Morales are some of the authors whose work will be studied. Three exams and a short research paper in addition to class attendance and participation are required.

215.342 Twentieth-century Latin American Literature
The object of this course is to familiarize students with representative literary works of authors such as Horacio Quiroga, Juan Rulfo, Ernesto Sábato, Jorge Luis Borges, Pablo Neruda and Gabriél García Márqués, among others. Discussions of literary historical tendencies, esthetic conceptions and narrative techniques will be based on close reading of assigned works. Two exams and two papers in addition to class attendance and participation are required.

215.412 Spanish Theater
This course will cover the development of the history of Spanish theater: authors, esthetic tendencies and historical and cultural contexts. From the early period, the reading of Calderón de la Barca’s *La vida es sueño* introduces the student to Golden Age Spanish Theater, which will be discussed in the context of the *corales de comedias*, Spanish society and culture. The emphasis of the course, however, is placed on more recent Spanish theatrical works by authors such as Ramón de Valle-Inclán, Alfonso Sastre, Sanchis Sinisterra and Alonso de Santos. A short essay is required on the Golden Age section of the course; a second (voluntary) paper will analyze Valle Inclán’s *Luces de bohemia*. There will be a final exam. Attendance and participation are required.

215.305 Spanish Art
Spanish Art covers architecture and art from earliest times. The course is divided into three sections: architecture and urbanism in Spain from antiquity to the 20th century, Spanish painting from Mannerism to the 19th century, and contemporary painting and sculpture. Visits to various museums in Madrid—The Prado, Reina Sofia, Sorolla—are included and required. Class assignments, attendance, demonstrated interest and class participation count heavily toward the final grade. There is also a final exam.

211.290 Modern Spanish Culture
Spanish culture will be studied in its historical and social contexts between 1931 and 1982. Movies, textbooks, popular music, photography, posters, literary works and censorship and the Movida Madrileña will constitute the material studied before and after Franco's dictatorship. Visits to museums (Reina Sofia) and monuments (Valle de los caídos) are an integral part of the course. A final paper and exam are required, as is class attendance and participation.

Graduate Programs

Requirements for the M.A. degree
The department does not accept applications for the M.A. degree as a terminal degree.

German B.A./M.A. Degree
The department offers highly qualified students the option to complete a combined degree in five years. To receive the B.A./M.A. degree, the student must complete advanced courses in German literature and pass the departmental written and oral master’s examinations. Students interested in this option should make an appointment with the Director of Undergraduate Studies no later than the spring of their junior year to discuss the options available to them.

Graduate Ph.D. Requirements
In addition to general university requirements for the Ph.D., the following regulations apply to graduate students in the Department of German and Romance Languages and Literatures:

To be accepted into the Ph.D. program, students must demonstrate by an exceptionally strong academic record that they are capable of advanced study in literature. They will choose French, German, Italian, Latin American, or Spanish literature as the major field of interest. The student will normally take two to three years of graduate courses and devote the fourth year to study and research in the country on which the student’s study concentrates. The well-prepared student can expect to receive the Ph.D. after five years of study. The graduate program in German and Romance Languages and Literatures emphasizes work in three complementary areas: literary history, close textual analysis (including explication de texte), and theory of interpretation. By way of preparing students in a variety of critical schools, the faculty and the visiting professors offer training in the different disciplines pertaining to critical theory, including philosophy, theory of language, psychoanalytic theory, intellectual history, and cultural anthropology.

In addition to the major language, the Ph.D. candidate must demonstrate proficiency in one or two other languages besides English, depending on the specialization. (See below for further information.) A dissertation proposal, presented to the faculty and students in their section, is required before official admittance to candidacy for the Ph.D. for French, Italian and Spanish graduate students.

French
For students who choose to specialize in an early modern period (medieval, Renaissance, or 17th century), proficiency in Latin is required by the end of the third semester. Students may also choose a minor field: another Romance literature, modern criticism, comparative literature, medieval studies, or some other field connected with the student’s major field.

German
In addition to fulfilling the general university requirements for advanced degrees, candidates for the M.A. must demonstrate fluency in spoken German, be able to write German reasonably well, have a good knowledge of the history of German language and literature, be familiar with the general cultural background, and have read extensively in German literature, particularly in the periods after 1700. During their first two years at Hopkins, candidates for the M.A. degree must pass two topical examinations. After the M.A., two major qualifying papers are required.
under the supervision of two advisors, chosen by the candidate, before work on the dissertation can be undertaken.

**Italian**

In addition to the major language, the student must demonstrate proficiency in two other foreign languages. The student must take a minimum of five semester of graduate courses. After this period, normally in the third year, the student will take examinations which, if completed successfully, will lead to candidacy for the Ph.D.

**Spanish**

In addition to the major language, the student must demonstrate proficiency in two other foreign languages. The student must take a minimum of four semesters of graduate courses. After this period, normally in the third year, the student will take four field examinations which, if completed successfully, will lead to candidacy for the Ph.D.

**Graduate Study Abroad**

The Department encourages and expects graduates student to do research abroad during their program of study. In the French section, an exchange program with the École Normale Superieure offers the opportunity for graduate students to study in Paris, where they are encouraged to participate to research programs at ENS, EHESS, and other Universities; an exchange program with University Paris-Diderot-Paris 7 offers the opportunity for graduate or post-graduate students in French to study and teach in Paris; and the University of Geneva offers a fellowship each year for a grad student in the French section. Ph.D. students in the French section are also encouraged to apply for the Chateaubriand scholarship offered by the Embassy of France. Exchange programs with the FU Berlin (Friedrich Schlegel Graduate School of Literary Studies), the University of Hamburg, and the Humboldt University, offer the opportunity for graduate students in the German section to study in Germany. In addition, the German section offers Max Kade travel grants for research in a German-speaking country. Italian graduate students can take advantage of a wealth of formal and informal contacts with Italian scholars, archives, and institutes. Spanish students may elect to make their fourth year a non-teaching year. After presenting a research proposal to their advisor, with the approval of that advisor and the head of section, they may elect to go abroad for a semester or the entire academic year in order to conduct research essential to their dissertation.

**Financial Aid**

The department has a number of fellowships for graduate students. Awards include university fellowships, which carry stipends and teaching fellowships currently set at $28,500 per academic year for teaching one section of an undergraduate language course each semester, in addition to remission of tuition fees. All graduate students are expected to do four years of apprentice teaching of elementary and intermediate level undergraduate courses as part of their professional preparation. The amount of classroom teaching required is usually three to four hours a week. Students are admitted for five years, fully funded, subject to annual review to assure satisfactory progress. In addition, stipends (equivalent to that year’s teaching fellowship) are available for study abroad during the third or fourth year.

Fourth- and fifth-year graduate students may also compete for Dean’s Teaching Fellowships, which provide opportunities for the design and teaching of undergraduate courses in literature, cultural studies, or intellectual history.

Graduate students conducting research in Italian studies compete each year for two Charles S. Singleton Travel Grants for study in Italy. This program is administered by the department and is open to graduate students from other departments.

**Application Procedures**

Prospective graduate students may visit the departmental website at [http://grll.jhu.edu](http://grll.jhu.edu) for further information on programs and faculty. All questions regarding the programs offered by the department should be emailed to grll@jhu.edu. Prospective students are encouraged to apply online through the secure Graduate Admissions website ([https://app.applyyourself.com/?id=jhu-grad](https://app.applyyourself.com/?id=jhu-grad)).

For current faculty and contact information go to [http://grll.jhu.edu/](http://grll.jhu.edu/)

**Faculty**

**Chair**

Derek Schilling
Modern and contemporary French literature; film esthetics and theory; geocriticism; urban and suburban studies

**Associate Professors**

Katrin Pahl
German literature and philosophy around 1800, affect and emotion, gender and sexuality, feminist and queer theory, psychoanalysis, rhetoric, comparative literature, literary theory, Hegel, Kleist

Neta Stahl
Director of the Stuhlman Program in Jewish Studies

**Professors**

Wilda Anderson
The literature of the French Enlightenment; the relationship between science and literature; the French Revolution and its aftermath

Sara Castro-Klarén
Colonial cultures and literatures; theory; women’s writing; modern Latin American cultures and literatures

William Egginton
Decker Professor in the Humanities Director, Alexander Grass Humanities Institute Spanish and Latin American literatures, comparative European literature and thought

Pier Massimo Forni
Italian literature; history and theory of civility

Eduardo González
Latin American literature, film and media studies

Jennifer Gosetti-Ferencei
Modern German and European literature, poetry, Continental philosophy, aesthetics, philosophy of literature

Elena Russo
17th- and 18th-century French literature

Harry Sieber
Renaissance and Baroque literature of Spain

Walter Stephens
Charles S. Singleton Professor of Italian: Medieval and Renaissance literature and its relation to philosophy and theology. Medieval and Renaissance literature and its relation to philosophy and theology

Rochelle Tobias
Modern German literature and thought; German-Jewish culture; Co-Director, Max Kade Center for Modern German Thought
Bernadette Wegenstein
Director: Center for Advanced Media Studies

Assistant Professors
Laura DiBianco
Modern Italian Literature and Cinema

Eugenio Refini
Renaissance poetics, rhetoric, and drama; the Classical tradition; Latin and vernacular humanism; the intersections of music and literature

Bécquer Seguin
Modern and contemporary Iberian literature, film, and culture; transatlantic studies; political theory; art history

Sam Spinner
Yiddish literature 19th and 20th centuries, German-Jewish culture and literature, visual culture, history of anthropology, museum studies, Holocaust studies

Faculty Emeriti
Richard L. Kagan
Lieselotte E. Kurth
Professor Emerita
Jacques Neefs
James M. Beall Professor: Genetic criticism, 19th- and 20th-century literature, theory of the novel
Stephen G. Nichols
James M. Beall Professor Emeritus of French and Research Professor: medieval language, literature, and culture, interrelation of literature with history, philosophy, and art history
Paul Olson
Professor Emeritus.

Language Program Directors
Flavia Azeredo Cerqueira
Portuguese Language Program Director, Senior Lecturer: Portuguese
Kristin Cook-Gailloud
French Language Program Director, Senior Lecturer: French
Deborah McGee Mifflin
German Language Program Director, Associate Teaching Professor: German
Loreto Sánchez-Serrano
Spanish Language Program Director, CALL Specialist, Associate Teaching Professor: Spanish
Alessandro Zannirato
Italian Language Program Director, Associate Teaching Professor: Italian

Senior lecturer
Bruce Anderson
French language
Claude Guillemard
French language
Aranzazu Moreno Hubbard

Spanish language
Maria del Rosario Ramos
Spanish language
Suzanne Roos
French language
Michelle Tracy
Spanish language
Heidi Wheeler
German language
April Wuensch
French language

Lecturers
Mariana Alvarez Torres
Spanish language
Grecia Chirinos-Delgado
Spanish Language
Beatrice Lang
Yiddish Language and culture.
Julie Lirot
Spanish language
Leonardo Proietti
Italian language
Julio Lopez Raja
Spanish language
Naiara Martínez Vélez
Spanish language
Michelle Tracy
Spanish language

Associate Teaching Professors Emeriti
Mary Miglio Bensabat-Ott
Sociolinguistics with a focus on bilingualism

Joint Appointments
Earle Havens
Adjunct Associate Professor
Margaret Keck
Professor of Political Science
Tamsyn Mahoney
Digital Scholarship Specialist, Lecturer
Gianna Pomata
Professor (School of Medicine)
Todd Shepard
Associate Professor of History
Susan Weiss
Professor of Musicology

Recent and Current Visiting Faculty
Leonard Barkan
**Courses**

**AS.210.101. French Elements I. 4.0 Credits.**
Provides a multi-faceted approach to teaching language and culture to the novice French student. The first semester emphasizes listening and speaking, while laying the foundation in grammar structures, reading, and writing. This course is designed for true beginners: Students with any previous background must take the placement test (http://www.advising.jhu.edu/placement_french.php) and receive below 30 (or below 200 on Webcape). Must complete both semesters successfully in order to receive credit. May not be taken on a Satisfactory/Unsatisfactory basis.
Instructor(s): C. Guillemard.

**AS.210.102. French Elements II. 4.0 Credits.**
The second semester of this intensive course for beginners provides students with the tools to read a play (Antigone by Jean Anouilh), to polish a written autobiography, and to develop their oral skills. A variety of cultural materials help students acquire grammatical structures and expand their vocabulary. May not be taken on a Satisfactory/Unsatisfactory basis. Prerequisites: AS.210.101 or AS.210.103. New students must take the placement exam (http://www.advising.jhu.edu/placement_french.php) and contact the instructor: cguille1@jhu.edu.
Instructor(s): C. Guillemard.

**AS.210.103. Learner Managed French Elements I. 3.0 Credits.**
This beginner course is specifically designed for students who have had some exposure to French. They must take the mandatory placement test: http://www.advising.jhu.edu/placement_french.php, and receive between 30 and 49. They will cover the first semester of French Elements at a pace suited for "false beginners" with major online components to supplement class instruction. Must complete the year with 210.102 or 210.104 to obtain credit. May not be taken on a Satisfactory/Unsatisfactory basis.
Instructor(s): B. Anderson.

**AS.210.104. Learner Managed French Elements II. 3.0 Credits.**
Continuation of the refresher course AS.210.103, offered for three credits and letter grade. Recommended for self-motivated students who have some knowledge of French and wish to continue their review of the language intensively. Major online component supplements in-class instruction.
Prerequisites: AS.210.101 OR AS.210.103 or appropriate test score
Instructor(s): B. Anderson.

**AS.210.111. Spanish Elements I. 4.0 Credits.**
This is an introductory Spanish language course. On completion of this course, the students will have acquired the basic communication and grammatical skills necessary for speaking, writing, listening and reading in Spanish. Students will demonstrate these skills through their performance in class, by completing several online assignments, and by taking part in three group presentations in addition to two comprehensive exams which focus on the following thematic topics: Greetings, University Life, Family and Leisure. Students will also be introduced to the culture, history and geography of various Spanish and Latin American countries. The content covered in Spanish Elements I is the foundation for all consecutive Spanish courses. A placement exam is required to ensure the appropriate level. Students wishing to retain credits for Spanish Elements I must complete Spanish Elements II with a passing grade. Your enrollment in Spanish Elements I will not be considered for approval until you have emailed the Spanish Language Director.
Instructor(s): M. Tracy.

**AS.210.112. Spanish Elements II. 4.0 Credits.**
This introductory Spanish language course is a continuation of the content covered in Spanish Elements I. On completion of this course, the students will have further developed the communication and grammatical skills necessary for speaking, writing, listening and reading in Spanish. Students will demonstrate these skills through their performance in class, by completing several online assignments, and by taking part in three group presentations in addition to two comprehensive exams which focus on the following thematic topics: Food, Sports, Shopping, Travel, and Health. Students will also be introduced to the culture, history and geography of various Spanish and Latin American countries. The content covered in Spanish Elements II prepares the students for Intermediate Spanish. May not be taken satisfactory/unsatisfactory. No new enrollments permitted after 4th class session
Prerequisites: AS.210.111 or appropriate placement exam score.
Instructor(s): J. Lirot; M. Tracy.
AS.210.150. Program Abroad: Preliminary Portuguese. 3.0 Credits.
Summer Abroad Program. First semester college-level Portuguese.
Students will develop basic listening, speaking, reading, and writing skills.
Some cultural readings are included. This course is intended for program
participants with little or no prior Portuguese language instruction. Open
to Brazil Program applications only. Course must be taken for a letter
grade.
Instructor(s): F. De Azeredo Cerqueira
Writing Intensive.

AS.210.151. Italian Elements I. 4.0 Credits.
This is a four-credit course, and Italian Elements II (AS.210.152) must
be completed in the Spring to receive credit. The aim of the course is
to provide students with basic listening, reading, writing, speaking, and
interactional skills in the language. All classes are conducted in Italian;
oral participation is strongly encouraged from the beginning. Students
wishing to retain credits for Italian Elements I must complete Italian
Elements II with a passing grade. No Satisfactory/Unsatisfactory option.
Instructor(s): Staff.

AS.210.152. Italian Elements II. 4.0 Credits.
Course helps students develop basic listening, reading, writing, speaking,
and interactional skills in Italian. The content of the course is highly
communicative, and students are constantly presented with real-life, task-
based activities. Course adopts a continuous assessment system (no
mid-term and no final).
Prerequisites: AS.210.151 or Placement Exam Part I.
Instructor(s): Staff.

AS.210.161. German Elements I. 4.0 Credits.
Four skills introduction to German language and culture. Develops
proficiency in speaking, writing, reading, and listening skills through
the use of basic texts, multi-media, and communicative language
activities. Online tools required. Both semesters must be completed with
passing grades to receive credit. May not be taken on a Satisfactory/
Unsatisfactory basis. Tuesday section is a mandatory hour; choose your
section based on the MWF time. Conflicts with Tuesday hour can be
resolved after start of semester. Language Program Director: Deborah
Mifflin. Students wishing to retain credits for German Elements I must
complete German Elements II with a passing grade.
Instructor(s): D. Mifflin.

AS.210.162. German Elements II. 4.0 Credits.
Continuation to the introduction to the German language and a
development of reading, speaking, writing & listening through the use
of basic texts, communicative activities. The culture of the German-
language countries is also incorporated into the curriculum. May not be
taken on a Satisfactory/Unsatisfactory basis. Choose your section based
on MWF schedule. Tuesday hour is mandatory but flexible and conflicts
with Tuesday hour can be resolved after the start of the semester.
Prerequisites: AS.210.161 or appropriate score on placement exam.
Instructor(s): D. Mifflin.

AS.210.163. Elementary Yiddish I. 3.0 Credits.
Year-long course. Includes the four language skills, reading, writing,
listening, and speaking, and introduces students to Yiddish culture
through text, song, and film. Emphasis is placed both on the acquisition
of Yiddish as a tool for the study of Yiddish literature and Ashkenazic
history and culture, and on the active use of the language in oral and
written communication. Both semesters must be taken with a passing
grade to receive credit. Students wishing to retain credits for Elementary
Yiddish I must complete Elementary Yiddish II with a passing grade.
Instructor(s): B. Lang.

AS.210.164. Elementary Yiddish II. 3.0 Credits.
Year-long course that includes the four language skills—reading, writing,
listening, and speaking—and introduces students to Yiddish culture
through text, song, and film. Emphasis is placed both on the acquisition
of Yiddish as a tool for the study of Yiddish literature and Ashkenazic
history and culture, and on the active use of the language in oral and
written communication. Both semesters must be taken with a passing
grade to receive credit. Recommended Course Background: AS.210.163
or instructor permission.
Instructor(s): B. Lang.

AS.210.171. Accelerated Italian Elements I for Advanced Spanish
Speakers. 4.0 Credits.
Course draws on the many similarities between Spanish and Italian to
help students develop basic listening, reading, writing, speaking, and
interactional skills in Italian in an accelerated fashion. The content of the
course is highly communicative, and students are constantly presented
with real-life, task-based activities. Course is taught in Spanish and
Italian. Students completing both semesters with a grade of A- or higher
will be able to place into Advanced Italian I (AS.210.351)
Instructor(s): A. Zannirato
Area: Humanities.

AS.210.172. Italian Elements II for Advanced Spanish Speakers. 4.0 Credits.
Course draws on the many similarities between Spanish and Italian to
help students develop basic listening, reading, writing, speaking, and
interactional skills in Italian in an accelerated fashion. The content of the
course is highly communicative, and students are constantly presented
with real-life, task-based activities. Course is taught in Spanish and
Italian. Students successfully completing the course with a grade of A- or higher
will be allowed to place into Advanced Italian I (AS210.351)
Prerequisites: AS.210.171 with a grade of A- or higher.
Instructor(s): A. Zannirato
Area: Humanities.

AS.210.177. Portuguese Elements I. 4.0 Credits.
This one-year course introduces students to the basic skills in reading,
writing, and speaking the language. Emphasis is placed on oral
communication with extensive training in written and listening skills.
Class participation is encouraged from the very beginning. All classes are
conducted in Portuguese. Students must complete both semesters with
passing grades to receive credit. May not be taken on a Satisfactory /
Unsatisfactory basis. No previous knowledge of Portuguese is required.
Instructor(s): F. De Azeredo Cerqueira.

AS.210.178. Portuguese Elements II. 4.0 Credits.
This course expands students knowledge of the basic language skills:
reading, writing, listening, speaking. It uses a multifaceted approach to
immerse students in the cultures of Brazil, Portugal, and Portuguese-
speaking Africa. The focus of the course is on oral communication
with, however, extensive training in grammar. The course is conducted
entirely in Portuguese. Lab work required. Students must complete both
semesters with passing grades to receive credit.
Prerequisites: AS.210.177 or equivalent score on placement test or
instructor approval.
Instructor(s): F. De Azeredo Cerqueira.
AS.210.201. Intermediate French I. 3.0 Credits.
This course develops skills in speaking, listening comprehension, reading, and writing. Systematic review of language structures with strong focus on oral communication and acquisition of vocabulary; extensive practice in writing and speaking; readings and films from French-speaking countries. Recommended Course Background: AS.210.102 or AS.210.104 or score between 65 and 89 on Placement test I.
Prerequisites: Students who have taken AS.210.203 [High Intermediate French] are ineligible to register for AS.210.201
Instructor(s): S. Roos
Area: Humanities.

Focus on oral communication; develops skills in oral and written expression, listening comprehension, and reading, with extensive study of films and readings from French-speaking countries. Online component via Blackboard. Continuation of AS.210.201. Recommended course background: AS.210.201 or AS.210.203.
Instructor(s): S. Roos
Area: Humanities.

AS.210.208. Intermediate French II Through Acting. 3.0 Credits.
This 5-week intensive course will cover the material of Intermediate French II. Through examining excerpts of popular French theater plays (by Camus, Sartre, Feydeau, Ionesco, and others), this class proposes to 1) improve French speaking and writing skills (pronunciation, intonation, vocabulary, syntax, argumentative reasoning, creative writing) 2) understand the linguistic nuances and socio-cultural practices expressed in the texts 3) learn the basic tools of acting (body language, vocal projection, physical expressivity, emotional expression, stage direction, improvisation, etc.). The course will include watching filmed representations of plays, as well as a performance at the end of the term. The daily hour overlapping with the Advanced class will focus on personalized, interactive, and level-based exercises.
Prerequisites: AS.210.201 OR AS.210.205 or appropriate placement.
Instructor(s): K. Haklin
Area: Humanities.

AS.210.209. The Sounds of French. 3.0 Credits.
This course introduces students to the sound system of French: its development over centuries, its standardized Parisian form versus regional and international dialects and accents, and the popularity of “word games” (abbreviations, acronyms, and verlan). The course will include extensive practice in perceiving, articulating, and transcribing sounds, words, and intonation groups through viewing film clips, listening to songs, and completing in-class lab assignments. Recorded speech samples obtained at the beginning, middle, and end of the semester will allow students to track their progress in moving toward more native pronunciation and intonation. May be taken concurrently with AS.210.205 or AS.210.305.
Instructor(s): Staff
Area: Humanities.

This 5-week intensive course will cover the material of Intermediate French I with an emphasis on listening comprehension and speaking; an attractive selection of classic and contemporary French movies (Les Intouchables, Manon des Sources, La Vie en rose, Sugar Cane Alley, among others) will enhance students’ acquisition of the language and will deepen their understanding of French and francophone cultures. The daily hour overlapping with the Advanced class will focus on personalized, interactive, and level-based grammar followed by group discussion on the movies. Creative role-play activities will develop students’ fluency.
Prerequisites: AS.210.102 or appropriate placement; placement exam link available at grll.jhu.edu
Instructor(s): C. Guillemard
Area: Humanities.

AS.210.211. Intermediate Spanish I. 3.0 Credits.
Intermediate Spanish I is a comprehensive study of Spanish designed for students who have attained an advanced elementary level in the language. The course is organized around a thematic approach to topics relevant to contemporary Hispanic culture. Students will practice the four language skills in the classroom through guided grammatical and creative conversational activities and through the completion of three comprehensive exams. Outside of class, students will complete extensive online assignments and write three major compositions (as part of the three exams). In addition, students will broaden their knowledge of Hispanic culture by viewing a Spanish-language film and by reading several literary selections. Successful completion of Intermediate Spanish I will prepare students for the next level of Spanish (Intermediate Spanish II). There is no final exam. May not be taken satisfactory/unsatisfactory. No new enrollments permitted after the third class session.
Prerequisites: AS.210.112 or appropriate Spanish placement exam score.
Instructor(s): Staff
Area: Humanities.

AS.210.212. Intermediate Spanish II. 3.0 Credits.
Intermediate Spanish II is a comprehensive study of Spanish designed for students who have attained a mid-intermediate level in the language or who have completed Spanish 212. The course is organized around a thematic approach to topics relevant to contemporary Hispanic culture. Students will practice the four language skills in the classroom through guided grammatical and creative conversational activities and through the completion of three comprehensive exams. Outside of class, students will complete extensive online assignments and write three major compositions (as part of the three exams). In addition, students will broaden their knowledge of Hispanic culture by viewing a Spanish-language film and by reading several literary selections. Successful completion of Intermediate Spanish II will prepare students for the next level of Spanish (Advanced Spanish I). There is no final exam. May not be taken satisfactory/unsatisfactory. No new enrollments permitted after September 13th
Prerequisites: AS.210.211 or appropriate Spanish placement exam score.
Instructor(s): G. Chirinos Delgado; N. Martinez-Velez
Area: Humanities.
AS.210.250. Program Abroad: Objective Portuguese - Level II. 3.0 Credits.
Summer Abroad Program. Third semester college-level Portuguese. Students develop basic listening, speaking, reading and writing skills. Cultural readings included. The course is designed to further develop and strengthen the language skills acquired in Portuguese 210.177 & 210.178. Open to Brazil Program applications only. Course must be taken for a letter grade.
Instructor(s): F. De Azeredo Cerqueira
Writing Intensive.

AS.210.251. Intermediate Italian I. 3.0 Credits.
Taught in Italian. Course continues building on the four essential skills for communication presented in Italian Elements courses (listening, speaking, reading, writing) on topics of increasing complexity. Course adopts a continuous assessment system. May not be taken Satisfactory/Unsatisfactory.
Prerequisites: AS.210.152 or placement exam
Instructor(s): A. Zaniraro; L. Proietti
Area: Humanities.

AS.210.252. Intermediate Italian II. 3.5 Credits.
Taught in Italian. Course continues building on the four essential skills for communication presented in Intermediate Italian I (listening, speaking, reading, writing) on topics of increasing complexity. Course adopts a continuous assessment system. May not be taken Satisfactory/Unsatisfactory.
Prerequisites: AS.210.251 or appropriate placement exam scores (Parts I II).
Instructor(s): A. Zaniraro; L. Proietti
Area: Humanities.

AS.210.261. Intermediate German I. 3.0 Credits.
Taught in German. This course continues the same four-skills approach (speaking, writing, reading, and listening) from the first-year sequence, introducing and practicing more advanced topics and structures. Expansion and extension through topical readings and discussion and multi-media materials. Online tools required. Language Program Director: Deborah Mifflin
Prerequisites: AS.210.162 or placement exam
Instructor(s): H. Wheeler
Area: Humanities.

AS.210.262. Intermediate German II. 3.0 Credits.
Taught in German. This course is designed to continue the four skills (reading, writing, speaking and listening) approach to learning German. Readings and discussions are topically based and include fairy tales, poems, art and film, as well as readings on contemporary themes such as Germany’s green movement. Students will also review and deepen their understanding of the grammatical concepts of German.
Prerequisites: AS.210.261 or placement exam.
Instructor(s): H. Wheeler
Area: Humanities.

AS.210.263. Intermediate Yiddish I. 3.0 Credits.
This course will focus on the Yiddish language as a key to understanding the culture of Yiddish-speaking Jews. Topics in Yiddish literature, cultural history and contemporary culture will be explored through written and aural texts, and these primary sources will be used as a springboard for work on all the language skills: reading, writing, listening, and speaking.
Prerequisite: AS.210.164 or equivalent, or permission of instructor.
Prerequisites: AS.210.164 or permission of instructor.
Instructor(s): B. Lang
Area: Humanities.

AS.210.265. Individualized Yiddish Practicum. 3.0 Credits.
This course will allow students at any stage of Yiddish language acquisition to hone their skills in reading, writing, listening and speaking. The program will be individualized for each student according to his or her needs while at the same time providing joint activities in which all can participate.
Instructor(s): B. Lang
Area: Humanities.

AS.210.266. German Conversation. 1.5 Credits.
This course is designed for intermediate and above students who wish to improve their conversational and oral presentational language skills. The syllabus aims to provide useful, relevant language and necessary discourse structures to hold conversations and presentations on varied topics of an everyday, as well as academic nature. Students will practice German to build confidence, develop fluency, and improve pronunciation and accuracy. Short texts, audio and films will provide the basis for discussion. Students’ fields of study and interests will be incorporated into the syllabus and tasks will be matched to the ability level of the students enrolled. Recommended Course Background: AS.210.262 or two years of college German or equivalent. May be taken concurrently with other courses in German. May be taken Pass/Fail. Not for major or minor credit.
Instructor(s): Staff.

AS.210.275. Fast Portuguese for Spanish Speakers and speakers of other Romance Languages I. 4.0 Credits.
This course is designed as an accelerated introductory course for speakers with a sound knowledge of Spanish and other romance languages. The course will cover the basics of Portuguese grammar and present selected aspects of the cultures of the Portuguese speaking countries. All classes are conducted in Portuguese. Students must complete both semesters with passing grades to receive credit. THERE IS NO FINAL EXAM. May not be taken on a Satisfactory / Unsatisfactory basis. No previous knowledge of Portuguese is required.
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities.

AS.210.277. Intermediate Portuguese I. 3.0 Credits.
More advanced training in the skills of the language with emphasis on vocabulary building, ease and fluency in the language through the use of a multifaceted approach. Materials used immerse students in the cultures of Brazil, Portugal, and Portuguese-speaking Africa, and reflect the mix of cultures at work in the contemporary Lusophone world. All classes are conducted in Portuguese. Lab is required. May not be taken on a Satisfactory/Unsatisfactory basis. Prereq: AS.210.178, or placement test.
Prerequisites: AS.210.178 or equivalent score on placement test or instructor approval.
Instructor(s): M. Spiker
Area: Humanities.

AS.210.278. Intermediate/Adv Portuguese. 3.0 Credits.
This course is conducted entirely in Portuguese. Emphasis is placed on vocabulary building, ease and fluency in the language through the use of a multifaceted approach. Materials used immerse students in the cultures of Brazil, Portugal, and Portuguese-speaking Africa, and reflect the mix of cultures at work in the contemporary Lusophone world. Lab work required.
Prerequisites: Prerequisite: AS.210.177 AND AS.210.178 or equivalent score on placement test or instructor approval.
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities.
AS.210.288. Portuguese: Conversation through Film & Music. 3.0 Credits.
Improve your Portuguese conversational and speaking skills through colorful Brazilian media. This course is designed for highly motivated undergraduate and graduate students who want to SPEAK Portuguese. Conversation sessions provide intensive work on communication skills through discussion on issues raised in films, news media & music. Grammar will be reviewed as needed outside of class with tutors or TA, freeing class time for more communicative activities. May not be taken on a Satisfactory / Unsatisfactory basis. Prereq: one semester of Portuguese (AS.210.177), two semesters of Spanish or Placement test. Instructor(s): Staff
Area: Humanities.

AS.210.301. Advanced French I: Achieving Accuracy. 3.0 Credits.
Students in AS.210.301 will focus primarily on written expression, learning to 'decipher' classic and contemporary French texts, in order to expand their vocabulary and communicate their ideas in writing with clarity and accuracy. (A primary focus on oral expression is provided in AS.210.302; the two advanced-level courses may be taken in either order or simultaneously.)
Instructor(s): B. Anderson; K. Cook-Gailloud
Area: Humanities
Writing Intensive.

AS.210.302. Advanced French II: Reaching Fluency. 3.0 Credits.
Students in 210.302 will focus primarily on oral expression through individual and group work on contemporary media (music, film, current events) in order to expand their vocabulary and become fluent in conversation across social-cultural contexts. (A primary focus on written expression is provided in 210.301; the two advanced-level courses may be taken in either order or simultaneously.)
Instructor(s): A. Wuensch
Area: Humanities
Writing Intensive.

AS.210.306. Medical French. 3.0 Credits.
This interactive course is designed to provide students with specific linguistic tools used in medical and public health fields, as well as a comprehensive understanding of health care systems in the French and francophone world. Through a wide range of media (newspaper articles, scenes from TV series, excerpts of historical and literary texts) and group discussions, we will focus on topics such as physical and mental health, consultation and diagnosis, hospitalization, specialized fields (epidemiology, neurology, psychiatry, etc.) and deontology.
Prerequisites: Prereq: AS.210.201 OR AS.210.202 or equivalent or permission (kacg@jhu.edu)
Area: Humanities

AS.210.309. The Sounds of French. 3.0 Credits.
This course introduces students to the sound system of French: its development over centuries, its standardized Parisian form versus regional and international dialects and accents, and the popularity of "word games" (abbreviations, acronyms, and verlan). The course will include extensive practice in perceiving, articulating, and transcribing sounds, words, and intonation groups through viewing film clips, listening to songs, and completing in-class lab assignments. Recorded speech samples obtained at the beginning, middle, and end of the semester will allow students to track their progress in moving toward more native pronunciation and intonation. Recommended Course Background: AS.340.101-AS.340.102 or equivalent; AS.210.301 (may be taken concurrently).
Instructor(s): B. Anderson
Area: Humanities

AS.210.311. Advanced Spanish I. 3.0 Credits.
This course is a comprehensive study of the Spanish language focused on the continuing development of students' communicative abilities and their knowledge of Hispanic cultures. Students will expand their use of basic structures of Spanish with a special emphasis on more difficult grammatical and vocabulary aspects, and further improve both their oral and written skills. Students will sharpen their critical thinking skills and listening abilities utilizing movies and written texts. This course combines an extensive use of an online component with class participation and three exams. Upon successful completion of this course, students will have acquired extended complex language tools that facilitate proficiency in Spanish and its use in various professional contexts. There is no final exam. May not be taken satisfactory/unsatisfactory. No new enrollments permitted after the third class session.
Prerequisites: AS.210.212 OR AS.210.213 or appropriate Spanish placement exam score.
Instructor(s): A. Hubbard; G. Chirinos Delgado; J. López Raja
Area: Humanities

AS.210.312. Advanced Spanish II. 3.0 Credits.
This course is thorough review of the Spanish language focused on the development of students' communicative abilities and their knowledge of Hispanic cultures. Students will both expand their knowledge of the basic structures of Spanish, with special emphasis on more difficult grammatical and vocabulary aspects, and further improve on oral and written skills. Students will increase their critical thinking skills and listening abilities utilizing movies and written texts. This course combines an extensive use of an online component, class participation and three exams. Upon successful completion of this course, students will have acquired more complex language tools to become proficient in Spanish and its use in various professional contexts. There is no final exam. May not be taken satisfactory/unsatisfactory. No new enrollments permitted after the third class session.
Prerequisites: AS.210.311 or appropriate Spanish placement exam score.
Instructor(s): A. Hubbard; J. López Raja
Area: Humanities

AS.210.313. Medical Spanish. 3.0 Credits.
Medical Spanish is a comprehensive examination of vocabulary and grammar for students who either work or intend to work in medicine and health-related fields in Spanish-speaking environments. The student will be able to participate in conversations on topics such as contrasting health systems, body structures, disorders and conditions, consulting your doctor, physical and mental health, first-aid, hospitalization and surgery on completion of this course. In completing the course's final project students will apply, synthesize, and reflect on what has been learned in the class by creating a professional dossier individualized to their professional interests. There is no final exam. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session.
Prerequisites: AS.210.311 OR AS.210.312 or appropriate Spanish placement exam score.
Instructor(s): J. López Raja
Area: Humanities
AS.210.314. Spanish for International Commerce. 3.0 Credits.
Spanish for international business is an overview of business topics in an international Spanish-speaking context with an emphasis on deep review of grammar and vocabulary acquisition. On completion of this course the student will have developed the ability to read and critically discuss business and government relations in Latin America and will have examine entrepreneurship, finance, marketing, business ethics, human resources and commerce in the Spanish speaking world. In completing the course’s final project students will apply, synthesize, and reflect on what has been covered in the class by creating a professional dossier individualized to their own professional interests. Concepts learned in this course will be directly applicable to careers linked to international relations and will apply to various careers in business. There is no final exam. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session. Language Program Director: Loreto Sanchez-Serrano
Prerequisites: AS.210.311 or or appropriate Spanish placement exam score.
Instructor(s): A. Hubbard
Area: Humanities.

AS.210.315. Spanish for International Relations. 3.0 Credits.
Spanish for international relations is an advanced examination of grammar and an analysis of international relations' topics in Spanish. By completion of this course the student will have developed the ability to read, critically discuss and demonstrate mastery of political and socio-economic issues in Spanish-speaking environments. Potential topics include a survey of the professions in international relations, NGOs in Latin America, intellectual property, cultural diplomacy, remesas, regional coalitions and treaties, and the environment. Class presentations and final projects will allow students to apply, synthesize, and reflect on what has been learned in the class by participating in a global simulation that will include a written exercise individualized to their professional interests. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the 4th class session
Prerequisites: AS.210.311 or or appropriate webcape score
Instructor(s): M. Ramos
Area: Humanities.

AS.210.316. Conversational Spanish. 3.0 Credits.
Conversational Spanish surveys high-interest themes, discusses short films by contemporary Hispanic filmmakers and offers a thorough review of grammar. The student will be able to participate in conversations on topics such as personality traits, social media, political power, art and lifestyles on completion of this course. Conversational skills mastered during the course apply to all careers interconnected by Spanish. There is no final exam. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session.
Prerequisites: AS.210.311 or or appropriate Spanish placement exam score.
Instructor(s): L. Sanchez; M. Ramos
Area: Humanities.

AS.210.317. Adv Spanish Composition. 3.0 Credits.
This third-year course is a hands-on and process-oriented introduction to discussion and compositional analysis. On completion of this course, students will have improved their Spanish writing skills in various types of compositions they might be expected to write in academic settings and in real-life formats such as film reviews, letters to the editor, cover letters, etc. The course also focuses on refinement of grammar and vocabulary use. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after September 13th.
Prerequisites: AS.210.312 or or appropriate Spanish placement exam score.
Instructor(s): L. Sanchez
Area: Humanities
Writing Intensive.

AS.210.319. ¡Salsa! The Afro-Antillean song. 3.0 Credits.
¡Salsa! The Afro-Antillean song surveys Caribbean music in an international Spanish-speaking context. As a language course, it reviews grammar and instils vocabulary acquisition through the close analysis of the biggest hits of salsa from the past one hundred years. In completing the course's final project students will apply, synthesize, and reflect on what has been covered in the class by creating a professional dossier individualized to their personal musical interests. On completion of this course the student will have developed the ability to read and critically discuss music and its history in the Spanish-speaking Caribbean and will have examined cultural roots, market dominance, and media crossovers in the musical universe of the Spanish-speaking archipelago of the Antilles. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session. Co-listed with AS.211.319
Prerequisites: AS.210.311 or or appropriate placement exam score.
Instructor(s): M. Ramos
Area: Humanities.

AS.210.350. Program Abroad: Objective Portuguese - Level III. 3.0 Credits.
Summer Abroad Program. Fifth semester college-level Portuguese. Students further improve conversation and comprehension proficiency. Develop reading and writing skills through literary analysis and grammar review. The class is designed to further develop and strengthen the language skills acquired in Portuguese 210.277 & 210.278. Open to Brazil Program applications only. Course must be taken for a letter grade.
Instructor(s): F. De Azeredo Cerqueira
Writing Intensive.

AS.210.351. Advanced Italian I. 3.0 Credits.
Course presents a systematic introduction to a variety of complex cultural and historical topics related to present-day Italy, emphasizing intercultural comparisons and interdisciplinarity, and encouraging a personal exploration of such topics. Course adopts a continuous assessment system (no mid-term and no final), and is conducted entirely in Italian. Year course; must complete both semesters for credit. No Satisfactory/Unsatisfactory option. Language Program Director: Alessandro Zannirato
Prerequisites: AS.210.252 or placement exam
Instructor(s): Staff
Area: Humanities
Writing Intensive.
AS.210.352. Advanced Italian II. 3.0 Credits.
Course presents a systematic introduction to a variety of complex cultural and historical topics related to present-day Italy, emphasizing intercultural comparisons, interdisciplinarity, and encouraging a personal exploration of such topics. Course adopts a continuous assessment system (no mid-term and no final).
Prerequisites: AS.210.351 or appropriate placement exam scores (Parts I, II and III).
Instructor(s): Staff
Area: Humanities
Writing Intensive.

AS.210.361. Advanced German I: Cultural Topics of the Modern German-speaking World. 3.0 Credits.
Taught in German. Topically, this course focuses on defining moments in cultural history in German speaking countries in the 2nd half of the 20th century. Films, texts and other media provide a basis for discussion. Emphasis on vocabulary and standards for doing business in Germany. Taught in German. Course is designed to familiarize students with the cultural and historical topics related to present-day Germany, most notably in chemical and mechanical engineering. Over the past decades, Germany has taken a lead in environmental sciences and information technology. In addition, Germany is now becoming an increasingly attractive place to pursue degrees in the technical fields. This course will provide practice and expansion in all language skill areas: analysis of texts, hands-on-activities, preparation of presentations, and discussion of topics. Specific areas of interest to the course members will be taken into consideration for the selection of materials. [Does not replace 210.362 as prerequisite for upper level courses or as major requirement.]
Prerequisites: AS.210.262 OR AS.210.361 OR AS.210.362 OR EQUIVALENT OR PLACEMENT EXAM
Area: Humanities.

AS.210.362. Advanced German II: Contemporary Issues in the German Speaking World. 3.0 Credits.
Taught in German. Topically, this course focuses on contemporary issues such as national identity, multiculturalism and the lingering social consequences of major 20th century historical events. Films, texts and other media provide a basis for discussion. Emphasis on improving mastery of German grammar, development of self-editing skills and practice in spoken German for academic use. Emphasis is placed on improving mastery of German grammar, development of self-editing skills and practice in spoken German for academic use. Introduction/Review of advanced grammar.
Prerequisites: AS.210.361 or equivalent score on placement test.
Instructor(s): D. Mifflin
Area: Humanities
Writing Intensive.

AS.210.363. Business German. 3.0 Credits.
Taught in German. Course is designed to familiarize students with the vocabulary and standards for doing business in Germany. Taking a cultural approach, students read texts and engage in discussion that elucidate the works of business, commerce & industry in Germany, the world's third largest economy. Emphasis is placed on vocabulary expansion and writing as it relates to business.
Instructor(s): J. Birke
Area: Humanities.

AS.210.365. German for Science and Engineering. 3.0 Credits.
Taught in German. This course is designed to provide language training in German tailored to students of science & engineering. Germany has long been a world leader in engineering, most notably in chemical and mechanical engineering. Over the past decades, Germany also has taken a lead in environmental sciences and information technology. In addition, Germany is now becoming an increasingly attractive place to pursue degrees in the technical fields. This course will provide practice and expansion in all language skill areas: analysis of texts, hands-on-activities, preparation of presentations, and discussion of topics. Specific areas of interest to the course members will be taken into consideration for the selection of materials. [Does not replace 210.362 as prerequisite for upper level courses or as major requirement.]
Prerequisites: AS.210.262 OR AS.210.361 OR AS.210.362 OR EQUIVALENT OR PLACEMENT EXAM
Area: Humanities.

AS.210.368. Advanced Yiddish II. 3.0 Credits.
Continuation of Advanced Yiddish I (AS.210.367). Students will continue to hone their skills in all four language areas: reading, writing, listening, and speaking. In addition to advanced grammar study and readings in Yiddish literature, the course will take into account the interests of each individual student, allowing time for students to read Yiddish texts pertinent to their own research and writing.
Prerequisites: AS.210.367
Instructor(s): B. Lang
Area: Humanities.

AS.210.369. Yiddish Texts I. 3.0 Credits.
This course will give students who have completed Advanced Yiddish the chance to improve their proficiency. The curriculum will be determined according to the research interests of the students with an emphasis placed on reading primary texts fluently. Since the course is taught in Yiddish, students will also have ample opportunity to practice the other language skills (listening, speaking, writing).
Prerequisites: AS.210.368 or permission of instructor.
Instructor(s): B. Lang
Area: Humanities.

AS.210.370. Yiddish Texts II. 3.0 Credits.
Continuation of Yiddish Texts I. This course will give students who have completed Advanced Yiddish the chance to improve their proficiency. The curriculum will be determined according to the research interests of the students with an emphasis placed on reading primary texts fluently. Since the course is taught in Yiddish, students will also have ample opportunity to practice the other language skills (listening, speaking, writing). Recommended Course Background: Yiddish Texts I or permission of the instructor.
Instructor(s): B. Lang
Area: Humanities.
AS.210.371. From the yidishe gas to the Yiddish Farm: Yiddish Identity and Yiddish Community. 3.0 Credits.
In premodern Ashkenaz, the vernacular Yiddish was an important factor maintaining a distinct Jewish communal identity. With the advent of modernity, and the abandoning of Yiddish by some Jews as their daily language, the choice to speak Yiddish and to use it as a vehicle of modern cultural production became a distinct strand in the web of new Jewish identities. In this course, students will develop a sociolinguistic understanding both of the place of Yiddish in premodern Jewish society, and ways in which the language was – and is – seen as essential to living a Jewish life in the modern world. Since this is an advanced language course, readings, discussion and written work will be in Yiddish. Grammar will be reviewed as necessary, according to the needs of the students.
Instructor(s): B. Lang
Area: Humanities, Social and Behavioral Sciences.

AS.210.375. Avant-garde movements: The MODERNISM in Portuguese speaking countries. 3.0 Credits.
This course surveys the avant-garde movements in Portuguese speaking countries, giving special attention to Portugal and Brazil. In the first half of the past century, Brazilian and Portuguese writers started a movement that later was considered as a revolution in the literary world. Analysis and discussion of the movement, on both sides of the Atlantic, will offer the opportunity to contemplate authors including, but not limited to Fernando Pessoa, Almada Negreiros, Sá-Carneiro, Branquinho da Fonseca, Gaspar Simões, Casais Monteiro, José Régio, and on the Brazilian side Mario de Andrade, Oswald de Andrade, Manuel Bandeira, Menotti del Picchia, and much later, Graciliano Ramos, Rachel de Queiroz, José Lins do Rego and obviously Jorge Amado. It explores the impact the Lusophone Modernism had in other avant-garde movements. Readings in Portuguese; the class is taught in Portuguese. THERE IS NO FINAL EXAM. May not be taken on a Satisfactory / Unsatisfactory basis. Prereq: Advanced Portuguese and Literature I (AS.210.391) or Placement test.
Instructor(s): V. Rodrigues.

AS.210.391. Advanced Portuguese Language & Literature I. 3.0 Credits.
This third-year course focuses on reading, writing, and oral expression. Under the supervision of the instructor, students will read two complete works by major Brazilian, Portuguese, and/or Afro-Portuguese writers each semester, followed by intense writing and oral discussion on the topics covered. Grammar will be reviewed as necessary. All classes are conducted in Portuguese. Prereq: 210.278 or placement test. Permission required
Prerequisites: AS.210.278 or equivalent score on placement test or instructor approval.
Instructor(s): M. Spiker
Area: Humanities
Writing Intensive.

AS.210.392. Advanced Portuguese: Language and Literature II. 3.0 Credits.
This course focuses on reading, writing, and oral expression. Under the supervision of the instructor, students will read several works by major Brazilian, Portuguese, and/or Afro-Portuguese writers, followed by intensive writing and oral discussion on the topics covered. Grammar will be reviewed as necessary. The course is conducted entirely in Portuguese. No satisfactory/unsatisfactory. Pre-requisites: 210.391 or placement test.
Prerequisites: AS.210.391 or equivalent score on placement test or instructor approval.
Instructor(s): E. Rosa
Area: Humanities
Writing Intensive.

AS.210.394. Portuguese for the professions. 3.0 Credits.
Enjoy lunchtime while preparing for your future career. Portuguese for the professions is a comprehensive examination of vocabulary and grammar for students who either work or intend to work in a Portuguese speaking environment. It focuses on the development of advanced communication skills according to students’ individualized professional interests through conversations, readings, discussions, writings and media. The course also highlights cultural nuances of the professional Portuguese-speaking world. Grammar will be reviewed as needed in class, but most of it will be done outside of class with tutors or a TA, freeing class time for more communicative activities. There is no final exam. May not be taken on a Satisfactory / Unsatisfactory basis. Prereq: one semester of Portuguese (AS.210.177), Two semesters of Spanish or Placement test.
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities.

AS.210.405. Teaching French in Public School-Community Based Learning. 3.0 Credits.
A Community-Based Learning (CBL) language course for upperclass students that: 1) establishes a mutually beneficial relationship between JHU students, a neighboring Elementary School, and their common community; 2) combines academic components (linguistic, pedagogical and social) with the experiential work with the community partner as a way to reinforce learning. Students participate in weekly meetings in French on campus to prepare for their classes and teach twice a week to 2nd, 3rd, or 4th graders at the Elementary school. Recommended course background: AS.210.301 or AS.210.302.
Instructor(s): C. Guillemard
Area: Humanities.

AS.210.409. Le monde francophone. 3.0 Credits.
This course examines both sociolinguistic and cultural aspects of the French-speaking world and the relationship between la francophonie and France itself. We focus on five regions—Sub-Saharan Africa (Cameroon and Senegal), Northern Africa (Morocco and Algeria), the Caribbean (Martinique and Haiti), North America (Quebec), and Europe (Belgium) —and consider language features unique to those regional varieties, the status of French as opposed to other indigenous languages and creoles, the demographics of their speakers, and the representation of their culture in media (particularly in short stories, poetry, song, and film). A semester-long research project on one of these main areas will allow students to combine their study of the French-speaking world with other disciplines of interest to them.
Instructor(s): B. Anderson
Area: Humanities.
AS.210.411. Translation for the Professions. 3.0 Credits.
Spanish Translation for the Professions surveys the field of contemporary translation theory and provides practice of translation from English to Spanish. Translation exercises may include comparing and contrasting texts of literature, medicine, law, technology, politics, and journalism. Students will identify and differentiate terminology specific to these various fields and will focus on practicing correct uses of the grammatical structures relevant to the translation of both English and Spanish. In the course’s final projects students will apply, synthesize, and reflect on what has been learned in the class by completing a translation exercise individualized to their professional interests. Strategies of communication mastered in this course will help students of Spanish throughout their careers, in that achievement of the course objectives will help students discern, translate, and evaluate the usefulness of translations in different professional settings. There is no final exam. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session.
Prerequisites: AS.210.313 or AS.210.314 or AS.210.315
Instructor(s): M. Ramos
Area: Humanities
Writing Intensive.

AS.210.412. Community Based Learning - Spanish Language Practicum. 3.0 Credits.
This fourth-year course involves a specially designed project related to the student’s minor concentration. On completion of this course, the student will be able to use the Spanish language in real world contexts.
The student-designed project may be related to each student’s current employment context or developed in agencies or organizations that complement student’s research and experimental background while contributing to the improvement of his/her language proficiency. There is no final exam. May not be taken satisfactory/unsatisfactory. No new enrollments permitted after first week of class.
Prerequisites: AS.210.411
Instructor(s): L. Sanchez
Area: Humanities
Writing Intensive.

AS.210.413. Curso de Perfeccionamiento. 3.0 Credits.
This fourth-year course is an in-depth examination of the Spanish grammar, including a wider range of idiomatic expressions and usages than students might have previously encountered. On completion of this course, students will be able to achieve the ACTFL Advanced-Mid to high level in oral and written expression as well as in reading and listening skills. The course will also help to prepare students for the DELE Intermediate or Superior levels, offered by the Instituto Cervantes. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the 4th class session.
Prerequisites: (AS.210.312 OR AS.210.317) AND (AS.210.313 OR AS.210.314 OR AS.210.315)
Instructor(s): L. Sanchez
Area: Humanities
Writing Intensive.

AS.210.417. Eloquent French. 3.0 Credits.
This highly interactive, writing intensive course places emphasis on:
1) providing students with linguistic tools that will help them reach a high level of written proficiency (advanced lexical, stylistic and idiomatic expressions, linking words used to develop and enrich complex sentences, stylistic and grammatical differences between French and English) 2) enhancing students’ analytical skills by introducing them to the French method of Explication de textes 3) teaching students to develop an academic style of writing by studying the different components of the dissertation française (introduction, problématique, argumentation, conclusion, utilisation de sources) 4) teaching students to develop their own style of writing. To that effect, we will study excerpts of French literary texts that deal with themes likely to enhance their own creative writing (lieux imaginaires, mémoire et autobiographie, création d’un personnage de roman, for example).
Instructor(s): K. Cook-Gailloud
Area: Humanities
Writing Intensive.

AS.210.450. Program Abroad: Objective Portuguese - Level IV. 3.0 Credits.
Summer Abroad Program. Emphasis on the development of communication skills: the ability to comprehend both written and spoken texts, admit o speak, read, and write in Portuguese with native-like proficiency. Open to Brazil Program applications only. Course must be taken for a letter grade.
Instructor(s): F. De Azeredo Cerqueira
Writing Intensive.

AS.210.451. Corso di Perfezionamento. 0.0 - 3.0 Credits.
This task-based course is designed to prepare students to acquire Effective Operational Proficiency in Italian (C1 level of the Common European Framework). By the end of the course, successful students will be able to 1) understand a wide range of demanding, longer texts, and recognize implicit meaning, 2) produce clear, well-constructed, detailed texts on complex subjects 3) express themselves fluently and spontaneously without much obvious searching for expressions, and 4) use language flexibly and effectively for social, academic, and professional purposes. Extensive independent work required. Course adopts a continuous assessment system (no mid-term and no final), and is conducted entirely in Italian. No Satisfactory/Unsatisfactory option. Recommended Course Background: AS.210.352 with a grade of B+ or higher, or appropriate placement exam score and interview with Language Program Director.
Prerequisites: AS.210.352 with a grade of B+ or higher, or appropriate placement exam score and interview with Language Program Director.
Instructor(s): A. Zannirato
Writing Intensive.

AS.210.501. French Independent Study/Language. 3.0 Credits.
Instructor(s): Staff.

AS.210.502. French Indep Stdy-Lang. 0.0 - 3.0 Credits.
Instructor(s): K. Cook-Gailloud.

AS.210.531. Independent study of Spanish. 3.0 - 4.0 Credits.
This course is geared towards the student’s independent completion of requirements for courses in Spanish. You may complete 210.111-112 Spanish Elements, 210.211-212 Intermediate Spanish or 210.311 Advanced Spanish through this independent study. Students are responsible for completing all work assigned for his/her individual level. Please see individual course description for more information.
Instructor(s): E. Gonzalez
Writing Intensive.
AS.210.541. Italian Independent Study-Language. 0.0 - 3.0 Credits. 
Prerequisites: AS.210.252 or higher or placement exam score Parts I and II. 
Instructor(s): A. Zannirato.

AS.210.551. Portuguese Independent Study. 3.0 Credits. 
Instructor(s): F. De Azeredo Cerqueira; S. Castro-Klaren.

AS.210.561. German Independent Study - Language. 3.0 Credits. 
Instructor(s): D. Mifflin; H. Wheeler.

AS.210.592. French Independent Study-Summer. 3.0 Credits.

AS.210.615. Adquisición del español como segunda lengua. 
This course will aim to clarify for future teachers the important aspect of the Spanish language syntax, related to cultural aspects, second language acquisition, issues of technology and assessment to prepare them for the task they will face in their own language classes. The course will include a review of several topics of Spanish grammar, concepts of second language acquisition and applied linguistics The course also will help to prepare students for the DELE Superior level offered by the Instituto Cervantes if they opt to take it. 
Instructor(s): L. Sanchez 
Area: Humanities.

AS.210.661. Reading and Translating German for Academic Purposes. 
Taught in English. This is the first semester of a year-long course designed for graduate students in other fields who wish to gain a reading knowledge of the German language. Seniors who intend to do graduate study in other disciplines are also welcome, with permission from instructor. Instruction includes an introduction to German vocabulary and grammatical structures as well as discussion of relevant translation practices. The goal of the course is for students to gain confidence in reading a variety of texts, including those in their own fields of study. No knowledge of German is assumed. Seniors by permission & Graduate students only. 
Instructor(s): H. Wheeler 
Area: Humanities.

AS.210.662. Reading & Translating German for Academic Purposes II. 
Taught in English. Seniors by permission & Graduate students only. This course is designed for graduate students in other departments who wish to gain reading knowledge of the German language and translation practice from German to English. This course is a continuation of the Fall semester. Focus on advanced grammatical structures and vocabulary. For certification or credit. 
Prerequisites: AS.210.661 or permission of instructor. 
Instructor(s): H. Wheeler 
Area: Humanities.

AS.210.700. German Language Teaching Practicum I. 
Provides methodological and practical support and oversight for graduate student instructors teaching Deutsch als Fremdsprache in the American university context. Two-semester sequence, includes orientation during the week before semester begins. Required for German Graduate Teaching Assistants in the first year of their teaching in the program. 
Instructor(s): D. Mifflin.

AS.210.701. German Language Teaching Practicum II. 
Required for German Graduate Teaching Assistants in the first year of their teaching in the program. Second semester of a two-semester sequence. 
Instructor(s): D. Mifflin.

AS.211.102. The Cosmic Imagination: How Literature Changes Our Understanding of the Universe. 3.0 Credits. 
Since time immemorial humankind has looked to the skies for clues as to our origins, our destiny, and the nature of existence itself. In some ways, one of the hallmarks of western science has been a story of viewing the cosmos in ever-greater clarity and detail. Yet the very nature of the universe—its massive size, the distance and obscurity of its farthest reaches—requires the active intervention of our imaginations to picture it, no matter how powerful the technologies we use. In this course we will look at how western cultures from the middle ages to the present have deployed the literary and philosophical imagination to try to grasp the ungraspable, and how those attempts in some cases helped prepare intellectuals and scientists to make very real advances in understanding the universe. 
Prerequisites: Students may not take and receive credit for AS.145.102 and AS.211.102. 
Instructor(s): W. Egginton 
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.211.104. Freshman Seminar: Weimar on the Pacific: German Exile Culture in the United States. 3.0 Credits. 
Freshmen seminar. After Hitler’s seizure of power in 1933, the number of artists and intellectuals who fled the Nazi regime soon rose into the thousands. Many of these German expatriates ultimately settled in the United States (e.g. Los Angeles, New York), where, simultaneously attracted and alienated by their new surroundings, they made a significant impact on American culture. The seminar will explore German Exile Culture in the U.S. in its broad variety spanning a spectrum from film to architecture, literature, and philosophy. Based on the aesthetic and conceptual specificities of the artifacts, class discussions will focus on the relations between art and politics, modernist and mass culture, art and capitalism, culture and democracy. The seminar will close with a look at postwar America and the McCarthy era, when European emigrants became the target of suspicion as left-wing intellectuals. 
Instructor(s): A. Krauss 
Area: Humanities.

AS.211.174. Media of Propaganda. 3.0 Credits. 
Today, promoting a particular political or personal point of view is not viewed as “propaganda,” but rather as building a community of equally minded people. But where do we draw the line, and when does the use of a medium in service of a certain message become intrusive and misleading? What role do democracy and cultural values play in this use or abuse of media? In this class the term “propaganda” will be evaluated carefully and applied to such historical media case studies as the informational use of the radio in World War One, Leni Riefenstahl’s Nazi propaganda films, the legendary success of advertisement campaigns in the 1950s and 1960s, the AIDS movement and other mobilization strategies from the 1980s to the 1990s, and the new values of friendship and propaganda in our current facebook nation. 
Instructor(s): B. Wegenstein 
Area: Humanities.
AS.211.202. Freshman Seminar: A Thousand Years of Jewish Culture. 3.0 Credits.

This course will introduce students to the history and culture of Ashkenazi Jews through their vernacular, Yiddish, from the settlement of Jews in German-speaking lands in medieval times to the present day. Particular emphasis will be placed on the responses of Yiddish-speaking Jews to the challenges posed by modernity to a traditional society. In addition to studying a wide range of texts—including fiction, poetry, memoir, song, and film—students will learn how to read the Yiddish alphabet, and will prepare a meal of traditional Ashkenazi dishes. No prior knowledge of Yiddish is necessary for this course.

Instructor(s): B. Lang
Area: Humanities.

AS.211.207. Waves of Feminism through Film and Media. 3.0 Credits.

This course will examine the movements known as second- and third-wave feminism as expressed in film and other media since the 1950s. Second-wave feminism—influenced in part by the French philosopher Simone de Beauvoir but driven by social and economic factors in the US and the post-war, industrialized west—depended from the practical exigencies of suffrage that drove the first wave before it and became concerned with defending the identity of women from being defined in terms of patriarchal norms. From popularized images of working women in US television series to the formalist experimentation of the France’s New-Wave in cinema, the media of the sixties and seventies absorbed and explored many of second-wave feminism’s central themes and critiques. Largely a critique of the perceived Euro-centrism of the second wave, third-wave feminism, coined in the early nineties, focused on the experience of women of color and those from the developing world who did not share the relatively privileged backgrounds of their predecessors. The second part of the course will examine how film and media since the nineties has incorporated and reflected this new inclusiveness, and strained to tell stories of women from a broad spectrum of backgrounds. We will take advantage of the visit to Hopkins by acclaimed media artist Sharon Hayes to examine how her own media practice has been shaped by successive waves of feminist thought and has in turn affected feminism. Other works will include the films of Agnès Varda and Shirin Neshat.

Instructor(s): B. Wegenstein
Area: Humanities.

AS.211.222. Italian Cinema: The classics, the Forgotten and the Emergent. 3.0 Credits.

This course traces the history of Italian cinema from the silent era to the new millennium, highlighting its main trends and genres, and reflecting on the major transformations modern and contemporary Italian society experienced over the twentieth and twentieth-first centuries. We shall examine iconic films such as Vittorio De Sica’s Bicycle Thieves, Federico Fellini’s La Dolce Vita, Michelangelo Antonioni’s L’Avventura, and Pier Paolo Pasolini’s Mamma Roma, that received international recognition and influenced other national, cinematic productions. We shall also look at the work of less famous, or independent filmmakers who received less critical attention. While this class takes an historical approach, it also includes a theoretical component and introduces students to the specificity of the cinematic language, examining films in relation to the mise-en-scène, frame composition, camera movements, editing, and sound. This class is taught in English.

Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.265. Panorama of German Thought. 3.0 Credits.

This course explores the rich terrain of German literature and philosophical thought, from Kant to today. At each meeting, we will investigate canonical texts of the German intellectual tradition, with an eye to discovering their unity as “German” philosophical and cultural artifacts and icons, as well as with an interest in establishing their well-deserved place in the wider, global discourses of world literature. In this way, we will learn to think critically in and with these important literary and philosophical texts from German-speaking lands as a means of viewing and appreciating the full panorama of German thought. Among authors read and discussed will be Kant, Goethe, Schiller, Hegel, Kleist, Heine, Fontane, Nietzsche, Freud, Kafka, Heidegger, Mann and Bernhard. Readings and discussion will be in English. German is appreciated but not required.

Instructor(s): M. Dornbach
Area: Humanities
Writing Intensive.

AS.211.278. Freshman seminar: Eataly: An Exploration of Italian Food Cultures. 3.0 Credits.

Italian cuisine is often recognized as one of the finest in the world. This Freshman Seminar will offer an exploration of Italian food cultures past and present. Discussion topics will include the Slow Food Movement, the tension between local and global, food and social justice, and the representation of food in literature, film, and other media. The course is taught in English. No knowledge of Italian is required, and everyone will learn some Italian words and expressions.

Instructor(s): A. Zannirato; L. Proietti
Area: Humanities.

AS.211.294. Freshman Seminar: Soccer in Brazil: opium of the masses. 3.0 Credits.

The course is taught IN ENGLISH. Futebol offers a unique perspective on politics, race and citizenship in Brazil. This course seeks to understand Brazilian culture through the historic national pastime of futebol. In addition to the main textbooks chosen for the class, by reading a variety of texts from newspapers, academic journals, fiction and film, students will be able to find their own approach to understanding the phenomenon of futebol within the social and political traditions of Brazil. No knowledge of Portuguese is required, but those who can read in Portuguese will have an opportunity to do so. Everyone will learn some Portuguese words and expressions. This class may count toward the Minor in Portuguese.

Instructor(s): F. De Azeredo Cerqueira
Area: Humanities.

AS.211.295. Staging History: Theater and Society in the Courts of Europe. 3.0 Credits.

During the 17th century, the growth of the play-going public of London, Madrid, and Paris transformed theater into an exceptional channel for cultural expression. This course combines the study of theater history, including the spaces, audiences, actors, and playwrights, with the literary analysis of major plays by Christopher Marlowe, Ben Jonson, Lope de Vega, Pierre Corneille, and Madame de Villedieu. The main objective of this course is to examine and discuss early modern drama in light of contemporary life at court.

Instructor(s): F. Gomez Martos
Area: Humanities.
AS.211.300. **Baptism by Fire. 3.0 Credits.**
This course will examine the history of Muslims in Spain who lived under political and cultural pressure -at times even the threat of bodily violence- to convert to Christianity and renounce the Arabic Language during Spain's so called 'Golden Age'. By analyzing key historical and literary texts, "Baptism by Fire" will afford particular attention to the early modern history of baptism and Arabic book burnings, historical and fictional alike, which intricately shaped the politics of language, religion, and identity in Spain. Course readings include period selections written by key religious figures such as Cardinal Francisco Jiménez de Cisneros, prominent historians including Miguel de Luna, and renowned authors like Miguel de Cervantes, among others. Class discussions will furnish students with continual opportunities to refine their interpretative, analytical, and linguistic skills by engaging a variety of discursive genres that provide the tools to challenge traditional visions of Islam's role in the history of Europe and one of its most powerful early modern kingdoms.
Instructor(s): I. Rogers
Area: Humanities.

AS.211.302. **Casanova's Variations. 3.0 Credits.**
Bored and exiled in the pine forests of rural Bohemia, far from the cities and the women he had loved and left, the aging Giacomo Casanova (1725-1798) spent his final years writing his memoirs. The Venice he grew up in no longer existed. The Paris he loved was riddled with Revolution. Writing was, he said, "the only remedy I could think of to keep me from going mad or dying of grief" (Willsher). Through a close reading of "Histoire de ma vie" (Story of my life), this course will explore different understandings of "moral order," "literary engagement," and "resistance". The question of how film adaptations have contributed to shaping these concepts will also be taken into consideration. Readings and discussions will be in English but majors in Italian, French, Romance Languages will have access to readings in original languages.
Instructor(s): G. Furci
Area: Humanities.

AS.211.304. **Paris Souterrain: Paris Underground. 3.0 Credits.**
This course will track uses of "the underground" in major canonical and peripheral literary works in the nineteenth century. Readings will include works by Balzac, Baudelaire, Hugo, and Zola.
**Prerequisites:** AS.211.402 OR HA.211.402
**Instructor(s):** R. Powers
**Area:** Humanities.

AS.211.312. **Acting French: learning about French language and culture through theater. 3.0 Credits.**
Performing a play in a foreign language not only improves language skills, but develops the ability to express oneself through the body and to communicate both efficiently and elegantly. Using excerpts from popular French stage plays by Camus, Sartre, Feydeau, Ionesco, Pagnol and Rostand among others, this course aims to help students to 1) improve French pronunciation, intonation, syntax, and vocabulary; 2) appreciate and understand linguistic nuance and socio-cultural practices; 3) learn fundamentals of acting that carry over into everyday communication, from body language and vocal projection to the expression of emotion and improvisation. Students will view filmed representations of select plays as well as present an end-of-semester staging. Recommended course background: AS.210.301.
**Instructor(s):** K. Cook-Gailloud; M. Alhinho
**Area:** Humanities.

AS.211.316. **Brazilian Cinema and Topics in Contemporary Brazilian Society. 3.0 Credits.**
Course is taught in ENGLISH - This course is an introduction to the academic study of cinema as a communicative art and to Brazilian film. The films selected focuses on films from the late 1950s to the present and highlight import episodes and challenges in the advancement of the Brazilian society as well as its cinematic production with a special view to the film aesthetics through analysis from a number of critical perspectives, including class, race, gender as well as ethnicity, nationalism or national identity, colonialism, social changes, and the politics of representation. In this sense, the films and documentaries that we will be watching and studying encompass the period from the rise of New Cinema (Cinema Novo) up to films exploring the most recent trends, including movies launched up to 2016. Students wishing to do the course work in English, for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. THERE IS NO FINAL EXAM. May not be taken on a Satisfactory / Unsatisfactory basis.
**Instructor(s):** F. De Azeredo Cerqueira
**Area:** Humanities
Writing Intensive.

AS.211.318. **Women in Pre-Modern French Literature. 3.0 Credits.**
This course will examine the changes in the relationship of women to literature in France up to the French Revolution from several points of view: (1) What were the social and intellectual contexts of gender distinctions? (2) How did men writing about women differ from women writing about women? (3) How were these questions affected by the changing norms of literary production? Texts by Marguerite de Valois, Mme. de Sévigné, Molière, Mme. de Lafayette, Prévost, Rousseau, Mme d'Epinal and Revolutionery memorialists
**Instructor(s):** W. Anderson
**Area:** Humanities
Writing Intensive.

AS.211.319. **¡Salsa! The Afro-Antillean song. 3.0 Credits.**
¡Salsa! The Afro-Antillean song surveys Caribbean music in an international Spanish-speaking context. As a language course, it reviews grammar and instils vocabulary acquisition through the close analysis of the biggest hits of salsa from the past one hundred years. On completion of this course the student will have developed the ability to read and critically discuss music and its history in the Spanish-speaking Caribbean and will have examined cultural roots, market dominance, and media crossovers in the musical universe of the Spanish-speaking archipelago of the Antilles. In completing the course's final project students will apply, synthesize, and reflect on what has been covered in the class by creating a professional dossier individualized to their own personal musical interests. Concepts learned in this course will be directly applicable to careers linked to intercultural and international relations while also apply to multiple careers in media, music industry and dance. There is no final exam. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session.
**Instructor(s):** M. Ramos
**Area:** Humanities.
AS.211.326. We Conduct - Documentary Production Internship. 3.0 Credits.
To apply for this practicum, you should send an email of motivation to professor Wegenstein at bernadette.wegenstein@jhu.edu. During this internship will accompany Bernadette Wegenstein (director), Shana Hagan (cinematographer), and Judy Karp (sound recordist) on the documentary Vérité set, as they document the history of women orchestral conductors. The film profiles the conductors’ incredible dedication, devotion, mentorship, and love for music itself, and highlights the camaraderie and mentorship between generations of female conductors and musicians. Most importantly, it shows their power in pursuing a field not historically welcoming to women, breaking down barriers of gender and race. This documentary feature presents women from different walks of life, including Sylvia Caduff, Marin Alsop, Alexandra Arrieche, Lina Gonzalez, 16-year old aspiring conductors Sumaya Elkashif and Maya Johnson, and members of the Baltimore OrchKids afterschool music program for children. The intertwining stories of these women and children, each accompanied by the music they embody, will culminate to reveal their astounding accomplishments as they conduct — the music, and the worlds around them. Filming will take place mainly at the Peabody Conservatory. Some field-trips will be optional (including to foreign destinations). Please note that this class will be held as a practicum, and some of the dates and times will be flexibly adapted to the needs of the artists’ residency. If you have a very full calendar in the Spring it is best advised not to take this class.
Instructor(s): B. Wegenstein
Area: Humanities.

AS.211.327. Italian Eco-cinema: Inconvenient Truths from 1945 to 2015. 3.0 Credits.
For centuries Italy, i.e. the Bel Paese, has been acclaimed for its natural beauty. However, during the country's rapid transformation from an agrarian to an industrial society, its natural wonders came under threat. Starting from the early post-war period to the current post-modern era, politically committed filmmakers have been unveiling Italy's "inconvenient truths." This class takes an eco-critical approach to Italian cinema, examining its ethics and aesthetics. We shall start with the works of iconic filmmakers such as Roberto Rossellini, Pier Paolo Pasolini, and Michelangelo Antonioni, and move to more contemporary films such as Matteo Garrone's Gomorrah, Alice Rohrwacher's The Wonders, and other feature and documentary films that embody the philosophies of the Slow Food and environmentalist movements.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.328. Berlin Between the Wars: Literature, Art, Music, Film. 3.0 Credits.
Explore the diverse culture of Berlin during the heyday of modernism. During the Weimar Republic, Berlin became a center for theater, visual arts, film, music, and literature that would have an outsized impact on culture throughout the world and the twentieth century. The thinkers, artists, and writers drawn to interwar Berlin produced a body of work that encapsulates many of the issues of the period: the effect of the modern city on society; “the New Woman”; socialist revolutionary politics; the rise of the Nazis; and economic turmoil. While learning about interwar Berlin’s cultural diversity, we will take a special look at works by Jewish writers and artists that engage with the question of ethnic, religious, and national identity in the modern world, specifically in the context of Berlin’s rich Jewish history and the rise of anti-Semitism in the interwar period. All readings will be in translation.
Instructor(s): S. Spinner
Area: Humanities.

AS.211.330. Curating Media Artists in Residence at JHU. 3.0 Credits.
The students will be closely involved with JHU's Center for Advanced Media Studies (CAMS directed by Bernadette Wegenstein), and the Baltimore Museum of Art ( curator Kristen Hileman) in preparing the BMA Black Box exhibit of Mary and Patrick Kelley’s new film, We Are Ghosts, set in a submarine: the film tells the story of life as experienced by the sailors in a U.S. submarine at the end of the second world war. Artist Mary Reid Kelley focuses on “minor aspects of life” in the submarine during non-combat — such as boredom, claustrophobia, and the effects of heavy drinking on the sailors. Included is also a restaging of Harry Truman's announcement of the bombing of Hiroshima — told from the sailors’ point of view. While this new work will be on display in the BMA's Black Box, Kelley’s 2016 film This is Offal (set in a morgue) will be showing at the museum. This film is centered around a dialogue between the ghost of a deceased woman, the victim of a suicide, and her animated organs. Students will also be traveling to Woodstock, NY on a field trip with professor Wegenstein for a studio visit with the artists at the beginning of the semester. Mary Reid Kelley is an artist who makes arresting, playful, and erudite videos that explore the condition of men and women throughout history. Drawing on literary and historical material, the videos involve intensive research and critical reassessments of standard historical narratives. Mary Reid Kelley is involved in every aspect of the videos' creation—from writing the scripts (typically in highly structured poetic verse), to designing the sets, props, and costumes, to performing the leading roles—and all of the videos are produced by her and her partner, Patrick Kelley, at their private studio. Kelley is known for her feminist videos that recall the theater of the absurd and German Expressionist cinema. Please note that this class will be held as a practicum, and some of the dates and times will be flexibly adapted to the needs of the artists’ residency. If you have a very full calendar in the Spring it is best advised not to take this class.
Instructor(s): B. Wegenstein
Area: Humanities.

AS.211.331. Vagabonds and Ramblers: Space & Place in Women's Cinema. 3.0 Credits.
In recent times in Italy, a new generation of women filmmakers has found its own space in the traditionally male dominated film industry. This “counter cinema” abounds with female city walkers, migrants, vagabonds and other types of urban nomads, whose movement through space signifies a quest for freedom, gestures of protest and rebellion, and a search for place. We start by looking at the work of a pioneer filmmakers such as Elvira Notari, the first woman director in Italy, and a search for place. We start by looking at the work of a pioneer filmmakers such as Elvira Notari, the first woman director in Italy, and then discuss the issue of gender and space in contemporary films by directors Francesca Comencini, Alice Rohrwacher, and Eleonora Danco. To enrich the analysis, we shall also examine films directed by non-Italians who deal with the theme of women’s mobility and their centrality/ marginality from different socio-geographic contexts. Other directors included will be Agnès Varda (France), Chantal Akerman (Belgium), Haifa al-Mansour (Saudi Arabia), and Xiaolu Guo (China) Readings will include essays by Laura Mulvey, Ann E. Kaplan, Linda Williams, and Patricia White.
Instructor(s): L. Di Bianco
Area: Humanities.
AS.211.333. The Holocaust in Film and Literature. 3.0 Credits.
How has the Holocaust been represented in literature and film? Are there special challenges posed by genocide to the traditions of visual and literary representation? Where does the Holocaust fit in to the array of concerns that the visual arts and literature express? And where do art and literature fit in to the commemoration of communal tragedy and the working through of individual trauma entailed by thinking about and representing the Holocaust? These questions will guide our consideration of a range of texts — nonfiction, novels, poetry — in Yiddish, German, English, French and other languages (including works by Primo Levi and Isaac Bashevis Singer), as well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Steven Spielberg). All readings in English.

Prerequisites: Cannot be taken by anyone who previously took AS.213.361
Instructor(s): S. Spinner
Area: Humanities.

AS.211.336. We Conduct Documentary Production Practicum II. 3.0 Credits.
During this internship will accompany Bernadette Wegenstein (director), Shana Hagan (cinematographer), and Judy Karp (sound recordist) on the documentary Vérité set, as they document the history of women orchestral conductors. The film profiles the conductors’ incredible dedication, devotion, mentorship, and love for music itself, and highlights the camaraderie and mentorship between generations of female conductors and musicians. Most importantly, it shows their power in pursuing a field not historically welcoming to women, breaking down barriers of gender and race. This documentary feature presents women from different walks of life, including Sylvia Caduff, Marin Alsop, Alexandra Arrieche, Lina Gonzalez, 16-year old aspiring conductors Sumaya Elkashif and Maya Johnson, and members of the Baltimore OrchKids afterschool music program for children. The intertwining stories of these women and children, each accompanied by the music they embody, will culminate to reveal their astounding accomplishments as they conduct — the music, and the worlds around them. Filming will take place mainly at the Peabody Conservatory. Some field-trips will be optional (including to foreign destinations). Please note that this class will be held as a practicum, and some of the dates and times will be flexibly adapted to the needs of the artists’ residency. If you have a very full calendar in the Fall it is best advised not to take this class. To apply for this practicum, you should send an email of motivation to professor Wegenstein at berna@jhu.edu.

Prerequisites: AS.211.326 or Permission from the Instructor
Instructor(s): B. Wegenstein
Area: Humanities.

AS.211.337. Wandering Jews? Jewish Migration in Film and Literature. 3.0 Credits.
Migration in all its forms has played a major role in shaping Jewish identity throughout history. From the Biblical exodus from Egypt through the beginnings of the diaspora under the Romans to the massive European Jewish immigration to America in the late 19th and early 20th centuries to the founding of the state of Israel, the migrations of Jews have also had a major place in Jewish literature. Going all the way back to the Bible, but focusing on the 20th century, this course will explore the ways in which literature and film represent the experience of migration, whether negative (compelled by expulsion or violence); positive (lured by economic or social opportunity); or somewhere in-between. We will examine poetry, plays, prose and film in Yiddish, German, Hebrew, and English (all in translation) on aspects of Jewish migration including the social and political factors motivating migration from the countryside to the city and from Central and Eastern Europe to the Americas, Palestine, and Israel. Issues under discussion will include: adaptation and assimilation; minority rights; what is the relationship of old and new or major and minor languages and literatures?; what is the place of tradition and heritage in a diasporic context? We will also consider the resonances between contemporary debates on migration and historical examples of these issues as they are reflected in literature and film.

Instructor(s): S. Spinner
Area: Humanities
Writing Intensive.

AS.211.341. Power and Resistance in French Political Thought. 3.0 Credits.
Even as a strong, divine-right monarchy emerged in France, following the Renaissance wars of religion, rebellious French thinkers never stopped questioning the foundations of power. They focused critically not only on the claims of authority issuing from the top, but also on the submissiveness of the governed and the reach of propaganda. This course examines how power shapes minds and bodies, from absolutism to the Revolution, to democratic laïcité. Readings include works by La Boétie, Montaigne, Loyseau, Bayle, Rousseau, Saint-Just, Maistre, Tocqueville, Foucault, Lefort, Rancière and the Assemblée Nationale. Readings and discussion in English.

Instructor(s): E. Russo
Area: Humanities.
AS.211.348. Holocaust Consciousness — An Intercultural and Interdisciplinary Approach Through Media Studies and Psychology. 3.0 Credits.
This course approaches Holocaust consciousness in the U.S. and Europe within a psychological and media-theoretical frame-work. It is also part of a larger research project between the Center for Advanced Media Studies at JHU and the Sigmund Freud University in Vienna. During the semester students will be tele-conferencing during five to six class sessions with students in the same course held at the Sigmund Freud University and taught by Professors Nora Ruck and Markus Brunner. Together we will examine Holocaust consciousness in the U.S. and Europe, and such phenomena as trauma, inter-generational transmission, and projection of the trauma of the victims’ and/or the perpetrators’. As primary materials we will be using war memoirs and documentary films (from the films of the “Bilderverbot” to today’s family ethnographies). Students will be teamed in small, inter-cultural groups to address both U.S. and a European perspectives on these materials. An excursion to the U.S. Holocaust Memorial Museum in Washington D.C. will also be part of the course.
Instructor(s): B. Wegenstein
Area: Humanities
Writing Intensive.

AS.211.349. JHU Bologna Program: Food for Thought: Gastronomy, Politics & Identity. 3.0 Credits.
Italian Culture course offered on the JHU Summer Program in Bologna. Permission required. Must be taken for a letter grade. Open to students admitted to the JHU Summer Program in Bologna only.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.350. Gritemos para no olvidar: A Survey of Heavy Metal Music and Culture in Latin America. 3.0 Credits.
Deans Teaching Fellowship: This course will explore the influence of Heavy Metal on culture in Latin America. It will offer a general survey of the history of Heavy Metal — both inside and outside of Latin America — and will discuss texts, movies, music videos, recorded interviews, pictures and websites in relation to their social, political and cultural contexts in Latin America.
Instructor(s): C. Pack
Area: Humanities.

AS.211.353. ¡Máscaras mexicanas!. 3.0 Credits.
Although masks are now global symbols of Mexican culture, the origins and evolution of the mask in Mexico are often shrouded in mystery. This course explores masked representations and stories of masking across a wide variety of media, including movies, comics, novels, plays, and wrestling performances. The question of the mask in Mexico is examined in different historical, literary, social, and religious contexts, with particular focus given to the masks of saints, gods, wrestlers, bandits, and superheroes. This course provides students with a basic understanding of Mexican history from the 19th to the 21st century, as well as different ways to engage theoretically with one of Mexico’s most iconic cultural emblems. Class taught in Spanish. Writing intensive. Recommend Course Background: As.210.311 or equivalent.
Instructor(s): C. Ray
Area: Humanities
Writing Intensive.

AS.211.358. Writing the Great War: French Literature and World War I. 3.0 Credits.
This course examines literary texts engaging with WWI and related topics such as class struggle, gender conflicts, and colonialism. Authors studied include H. Barbusse, J. Cocteau, L.F. Celine, A. Malraux. Course taught in French.
Prerequisites: AS.210.302 OR AS.212.333 OR AS.212.334 OR AS.211.401 OR AS.211.402
Instructor(s): C. Benaglia
Area: Humanities.

AS.211.361. Narratives of Dissent in Israeli Society and Culture. 3.0 Credits.
In this course we will study and analyze the notion of dissent in Israeli society and culture on its various literary and artistic forms. We will examine the emergence and the formation of various political and social protest movements, such as the Israeli Black Panthers, Israeli feminism and the 2011 Social Justice protest. We will discuss at length the history and the nature of dissent in the military and in relation to Israeli wars and will track changes in these relations. Significant portion of the course will be dedicated to the literary, cinematic and artistic aspects of Israeli dissent and their influence on Israeli discourse. We will explore the nature and role of specific genres and media such as the Israeli satire, Israeli television, newspaper op-ed and the recent emergence of social media. Students wishing to work in English exclusively for 3 credits should enroll in section one. Students who are fluent in Hebrew and are wishing to attend an additional hour-long Hebrew discussion session per week with Professor Cohen (time TBD in consultation with enrolled students) for 4 credits should enroll in section two.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.

AS.211.363. The Italian-American Experience: From the Margins to the Mainstream. 3.0 Credits.
This course explores the many depictions, descriptions, and definitions of Italian-American ethnicity and identity in various media, from the narratives and poetry of the first Italian immigrants in the nineteenth century to the wildly popular, stereotype-promoting American films and television shows of today. Through literature, film, poetry, language, music, gender studies, and study of religious and cultural traditions, we will investigate how Italian-Americans express their identity to others.
Instructor(s): A. Falcone
Area: Humanities.

AS.211.364. Drama Queens: Opera, Gender, and the Poetics of Excess. 3.0 Credits.
What is a drama queen? According to the Oxford English Dictionary, a drama queen is “a person who is prone to exaggeratedly dramatic behaviour” and “a person who thrives on being the centre of attention.” While drama queens exist among us, the world of opera is certainly one of their ideal environments. Echoing back to their tragic fates, the powerful voices of Dido, Medea, Violetta, and Tosca never ceased to affect their empathetic public. In fact, excess and overreactions are two main features of the operatic experience both on stage and in the audience. By focusing on the ways in which operatic characters are brought to life, the course explores the social, political, and gender dynamics that inform the melodramatic imagination. Students will have the opportunity to attend live HD broadcasts of Verdi’s La Traviata and Tchaikovsky’s Eugene Onegin from the Metropolitan Opera. No musical skills required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.
AS.211.366. Cuisine and Culture in Latin American Film. 3.0 Credits.
This course is a comprehensive study of presentations of food in Latin American Film. Cuisines are cultural symbols that bind together people in ritual and into a community. The goal of this class is to interpret how food habits function beyond providing calories and sustenance. Films from Latin America will be used as an entrée to discussing topics of food as medicine, family/community, and gender and as links to the history of Latin America. Students will be able to identify and differentiate between tropes of, as well as approaches to, food in film, and theories of food production, distribution and consumption in Latin America. Assignments will include a weekly film viewing, along with primary theoretical readings (in Spanish) around food and culture. Several presentations and a final project will focus on continuing research into food representations in films selected by individual students in which you will be able to apply what you have learned during this course to analyze additional works, thereby gaining a deeper understanding of Latin American cultures and values.

Prerequisites: Advanced Spanish I (210.311), or appropriate placement exam score
Instructor(s): J. Lirot
Area: Humanities.

AS.211.367. La Nouvelle Vague. 3.0 Credits.
Exploration des films les plus importants et des principaux cinéastes de la Nouvelle Vague française; introduction à l'analyse et à l'appréciation des films. Conducted in French. Recommended Course Background: AS.210.301 or permission of the instructor. Recommended screenings Tuesday 7:30pm. $40 lab fee.
Instructor(s): S. Roos
Area: Humanities.

AS.211.368. Program Abroad: Italië: Politics, Culture, and Society. 3.0 Credits.
Course in Italian culture offered on the JHU summer program in Bologna. Open to students on the JHU Bologna Summer Program only. Permission required.
Instructor(s): E. Refini; S. Morgan
Area: Humanities.

AS.211.371. Kafka and the Kafkaesque. 3.0 Credits.
Franz Kafka is regarded as one of the most influential writers of the 20th century. To this day, his lucid and subtle prose continues to intrigue literary critics, writers of fiction, and readers with observations that create a fictive world at once strange and familiar, hopelessly tragic and hilariously comical. The related term “kafkaesque” refers to the unique character of a literary universe that is perceived as both eerie and resistant to any classification. In this course, we will analyze texts by Franz Kafka from a variety of perspectives: as investigations into modern institutions and bureaucracy, law, punishment and family structures. Special emphasis will be given to the exploration of Kafka’s poetic practice, i.e. to the material, rhetorical and performative quality of his writing. In addition to reading a selection of Kafka’s prose and analyzing several film adaptations, we will also discuss some influential commentaries on his work and discuss Kafka’s impact on the conceptualization of modernity. Students will gain an in-depth understanding of Kafka’s oeuvre while developing skills in critical analysis and literary close reading.
Instructor(s): A. Krauss
Area: Humanities.

AS.211.377. Transatlantic Mafias: Organized Crime in Mexico and Italy. 3.0 Credits.
Both Mexico and Italy deal with criminal organizations which daily challenge the state and its institutions yet at the same time maintain an episodic and illegal collaboration with them. This course intends to show, understand and discuss how mafias, in their many incarnations, interact with contemporary societies.
Instructor(s): M. Cantarello
Area: Humanities
Writing Intensive.

AS.211.380. Modern Latin American Culture. 3.0 Credits.
Taught in Spanish. This course will explore the fundamental aspects of Latin American culture from the formation of independent states through the present—in light of the social, political, and economic histories of the region. The course will offer a general survey of history of Latin America, and will discuss texts, movies, songs, pictures, and paintings, in relation to their social, political, and cultural contexts. May not be taken satisfactory/unsatisfactory.
Prerequisites: AS.210.312
Area: Humanities.

AS.211.390. Modern Spanish Culture. 3.0 Credits.
This course will explore the fundamental aspects of Spanish culture from the nineteenth to the twenty-first centuries. The course will offer a general survey of the history of Spain and will discuss texts, movies, songs, pictures, and paintings in relation to their social, political, and cultural contexts. This course will be of particular interest for students planning on spending a semester abroad in Spain—specially for those students going to the JHU Fall Semester in Madrid, at Carlos III University. Taught in Spanish. Recommended Course Background: AS.210.311 or appropriate Webcape score. NOTE: THIS COURSE IS NOW AS.215.390 as of 3/27/17
Prerequisites: AS.210.312
Instructor(s): E. Gonzalez
Area: Humanities.

AS.211.394. Brazilian Culture & Civilization. 3.0 Credits.
The course is taught in English. No knowledge of Portuguese is required. This course is intended as an introduction to the culture and civilization of Brazil. It is designed to provide students with basic information about Brazilian history, art, literature, popular culture, theater, cinema, and music. The course will focus on how indigenous Asian, African, and European cultural influences have interacted to create the new and unique civilization that is Brazil today. The course is taught in English, but ONE extra credit will be given to students who wish to do the course work in Portuguese. Those wishing to do the course work in English for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. The sections will be taught simultaneously. Section 01: 3 credits Section 02: 4 credits (instructor's permission required)
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.
AS.211.397. Program Abroad: Brazilian Culture & Civilization. 3.0 Credits.
Summer Abroad Program. Intensive language and culture program offered in Rio de Janeiro, Brazil. The Culture and Civilization course strengthens students’ language skills while deepening their understanding of Brazilian history and culture. Pre-req: 1 semester of Portuguese or 1 year of Spanish. Open to Brazil Program applications only. Course must be taken for a letter grade.
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.

AS.211.400. Topics in Romance Literatures. 3.0 Credits.
This year’s “Topics in Romance Literatures” course is entitled “Voicing the Body: Sex and Desire in Medieval Poetry.” If you think that medieval poetry is all about idealized love and spiritual sublimation, then this course will make you change your mind. We will explore works and authors from all across Europe, from the erotic “Carmina burana” to the voluptuous poetry of French troubadours and trouvères, from German love poetry to the sensual songs of Spain and the passionate verses of Italian poets such as Dante and Petrarch. The course will explore the ways in which medieval poets sing about bodily passions and voice the lovers’ desire, with a special focus on the ways in which poetry interacted with music and was transmitted through music. The class is taught in English and all readings will be available in English. Students in Romance Languages (Italian, French, Spanish), depending on their language skills, will have the opportunity to work on the originals. A special reading list will be set up for graduate students who will take the course.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.211.401. La France Contemporaine. 3.0 Credits.
Students will explore contemporary French society and culture through a wide variety of media: fiction and non-fiction readings (graphic novels, news periodicals, popular magazines), films, music, art, websites, and podcasts. A diverse range of hands-on activities in addition to guided readings will help students develop cultural awareness as we discuss topics such as education, politics, humor, sports, cuisine, immigration, slang, and national identity, as well as the historical factors that have influenced these facets of French and francophone culture. Recommended Course Background: AS.210.301 or AS.210.302 or permission of instructor.
Instructor(s): A. Wuensch
Area: Humanities
Writing Intensive.

AS.211.402. La France Contemporaine II. 3.0 Credits.
Students will explore contemporary French society and culture through a wide variety of media: fiction and non-fiction readings (graphic novels, news periodicals, popular magazines), films, music, art, websites and podcasts. A diverse range of hands-on activities in addition to guided readings will help students develop cultural awareness as we discuss topics such as education, politics, humor, sports, cuisine, immigration, slang, and national identity, as well as the historical factors that have influenced these facets of French and francophone culture. Recommended Course Background: AS.210.301-AS.210.302 or AS.210.301 or permission of instructor.
Instructor(s): A. Wuensch; B. Anderson
Area: Humanities.

AS.211.410. Toward Modernity: France 1848-1885. 3.0 Credits.
The second half of the Nineteenth Century in France is a period of dramatic political, social, historical, and technical experiments and profound changes. It is as well a fascinating period of artistic creativity in Literature and Art, considered as the rise of Modernity. We’ll read texts by Hugo, Flaubert, Zola, Jules Verne, Baudelaire, Rimbaud, Mallarmé, Tocqueville, Michelet, and study works by Courbet, Manet, Monet, Berlioz, Saint-Saëns, Fauré.
Instructor(s): J. Neefs
Area: Humanities
Writing Intensive.

AS.211.421. Almodóvar Measure for Measure. 3.0 Credits.
A select few films from Spain’s renowned director and top cultural mule. Focus on inter species identities, cyborg antics, mythmaking through the altering of memories and remake of Hollywood studio and post-studio celebrities in the spectrum of perversity.
Instructor(s): E. Gonzalez
Area: Humanities.

AS.211.431. Desecrating the Sacred Heart: Science, Religion and Art in Fin-de-Siècle France. 3.0 Credits.
This interactive course analyzes the stakes underlying the construction of Paris’ controversial Sacré-Coeur Basilica in Montmartre. In the light of heated 19th-century debates on moral authority that opposed religious believers and partisans of a secular state inspired by a scientific ethos, we will consider how the advocates of both sides use specific rhetorical techniques in the public domain (newspaper articles, caricatures, speeches) and artistic devices (paintings, literary writings) to convince their audience of the validity of their claims. The course will open up onto contemporary debates that show similar ethical conflicts.
Instructor(s): K. Cook-Gailloud

AS.211.445. Rogues, Tricksters, and Saints: Boccaccio’s Decameron. 3.0 Credits.
Boccaccio’s Decameron (1352), a collection of 100 short stories, ranges from the bawdy through the cynical to the romantic and even fantastic. It has inspired numerous writers, artists, musicians and film-makers. We will read Boccaccio’s masterpiece on its own terms and in relation to the development of story-telling, from gossipy “news” to artistic devices (paintings, literary writings) to convince their audience of the validity of their claims. The course will open up onto contemporary debates that show similar ethical conflicts.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.
AS.211.449. America Through French Eyes: French Travellers to America. 3.0 Credits.
From early colonial efforts in the sixteenth century through the time of the great political revolutions and down to the present, America has exercised a deep fascination on the French. This course will look at French representations of America in art, literature and political thought across the centuries. Through a range of materials including travel accounts, essays, novels, maps, paintings and film, we will investigate how French perceptions of America have shifted over time, often in response to changes in French society and culture. All texts will be read in translation. Course work will include visits to JHU's Special Collections and the Walters Art Museum downtown
Instructor(s): S. Miglietti
Area: Humanities

AS.211.472. Barbers and countesses: conflict and change in the Figaro trilogy from the age of Mozart to the 20th century. 3.0 Credits.
2016 marks the bicentennial of Rossini's irreverent masterwork The Barber of Seville, which premiered in Rome in February 1816. Thirty years earlier, in 1786, Mozart's The Marriage of Figaro had opened in Vienna. The two operas, based on the first two plays of Beaumarchais' controversial "Figaro trilogy", stage conflicts of class and gender, challenging the assumptions of the aristocracy as well as the ludicrous pretensions of the raising bourgeoisie. The same themes inform the post-modern portrayal of the past in John Corigliano's The Ghosts of Versailles (1991), which ideally completes the musical afterlife of the trilogy. By studying how the plays were adapted to the opera stage within their different cultural and historical contexts, the course will explore the representation of the ideological, social, and political turmoil that, eventually, culminated in the French Revolution. The course will also include field trips and screenings of movies such as Stanley Kubrick's Barry Lyndon (1975) and Milos Forman's Amadeus (1984). This course may be used to satisfy major requirements in both the French and Italian majors.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.211.475. Inside the Writer's Laboratory. 3.0 Credits.
How do books come to life? Behind every masterpiece is a tale of hard work, dialogue with other texts, and constant negotiations with social and material circumstances that evolve over time. This course opens up the "laboratory" of figures of the European Renaissance like Erasmus, Machiavelli, and Montaigne to explore the world of writerly culture in its manifold expressions, including authorial revision, self-translation, controversy, censorship, intertextuality, and forgery. Our own laboratory will be the Department of the Special Collections, where we will spend a good deal of our time handling manuscripts and early printed books. Course may be used to satisfy major requirements in both French and Italian sections.
Instructor(s): S. Miglietti
Area: Humanities
Writing Intensive.

AS.211.479. Dante's Journey through the Afterlife. 3.0 Credits.
Dante's Divine Comedy presents a complete picture of the medieval world-view in all its aspects: physical (the structure of the cosmos), historical (the major actors from Adam to Dante himself) and moral (a complete system of right and wrong). Dante shows how the Christian religion portrayed itself, other religions, the nature of God, humans, angels and devils, and human society. We will explore these topics both from the viewpoint of Dante's own time, and in terms of its relevance to our own societal and cultural concerns.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.211.480. Religious Themes in Film and Literature. 3.0 Credits.
This course would be of interest to anyone who would like to learn about the intersection of religion and modern culture. At the center of the course will stand a close study of the representation of religious themes and their role in modern literature and cinema. The works which we will deal with are not considered religious and yet they include religious themes as part of their narrative, images, language or symbolic meaning. We will trace in various works from various countries and genres, themes such as: divine justice, providence, creation, revelation, the apocalypse, prophecy, sacrifice and religious devotion. We will also study the ways in which Biblical and New Testament stories and figures are represented in these works. The course will have a comparative nature with the aim of learning more about the differences between the literary and cinematic representations.
Instructor(s): N. Stahl
Area: Humanities.

AS.211.500. Independent Study-Portuguese Culture. 0.0 - 3.0 Credits.
Instructor(s): F. De Azeredo Cerqueira.

AS.211.501. Independent Study-French Culture. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.211.638. The Possibility of the Novel: Theory and Poetics of the Genre.
This class will be taught by visiting Max Kade Professor, Anja Lemke. The class will analyze the novel as the classical genre of the possible. It will examine the question of form as taken up in the novel and its relation to different figurations of possibility as contingency, faculty, utopia etc. Readings will include classical texts on novel theory (e.g., von Birken, Huet, Blankenburg, Schlegel, Hegel, Lukács), theory included in novels (e.g., Goethe, Wilhelm Meister, Musil, Mann ohne Eigenschaften), texts that try to connect forms of narration with reflections on possibility (Blumenberg, Luhmann and recently Rüdiger Campe and Joseph Vogl) and some general reflections on the relation of the real to the possible (Aristotle, Leibniz, Agamben).
Instructor(s): A. Lemke
Area: Humanities.
AS.211.641. Women Filmmakers from the Margins.
Filmmaking remains an overwhelmingly male-dominated profession, but women are making significant inroads, and in so doing are leaving their distinctive mark on the medium. In this seminar we will examine the films of a group of women auteurs (those who write and direct their own films) who have endeavored to speak from the margins—be they social, geographical, or sexual—and whose work has challenged mainstream cinematic norms. The filmmakers whose work we will analyze may include Jane Campion, Australia; Aurora Guerrero, Mexico-USA; Claudia Llosa, Peru; Mira Nair, India-USA; Marialy Rivas, Chile; So Yong Kim, Korea.
Instructor(s): B. Wegenstein
Area: Humanities
Writing Intensive.

AS.211.666. Graduate practicum: Mapping the Scholarly Landscape I (Research Skills).
Texts have lives. From handwritten manuscript to digital format, the various incarnations of the literary text have implications for literary scholarship. This course examines the many lives of a literary text and the issues of access, retrieval, and research. From online resources to the core printed reference works, this course acquaints graduate students with the range of scholarly apparatus in the field of literary studies. The course will be conducted in 6 two-hour sessions on Sept 15, 29, Oct 13, 27 Nov 10 and Dec 1.
Instructor(s): T. Rose-Steel
Area: Humanities.

AS.211.667. Graduate practicum: Mapping the Scholarly Landscape II (Tools for Professional development).
Spring Semester (coordinated by GRLL faculty with the participation of advanced grad students) 1. Preparing a syllabus, marketing your classes (DTF, Summer, Intersession) [with the participation of successful DTF/Intersession instructors] Options for online teaching 2. Writing a conference paper abstract; conference presentations 3. Organizing a conference/symposium [led by advanced grad students] 4. How to get published (what, when, where) 5. Academic review writing 6. Options for fellowships/grants/career development
Instructor(s): E. Refini
Area: Humanities.

AS.211.670. The Gothic Meme in French Culture.
Medieval churches—embodied by French Romanesque and Gothic edifices—have an unexpected status in modern culture. They are visible as monumental reminders of the medieval past, but their true role is little understood. In fact, they were vibrant creators of culture and politics in their own time, and the origin of a dynamic cultural meme in the modern world. Misunderstanding of medieval culture began in the Renaissance. Unlike "Romanesque"—a term invented at the beginning of the 19th century—Renaissance writers coined the word "Gothic" as a pejorative descriptor for medieval architecture (considered "barbarous"), a term that quickly came to designate medieval culture in general. Only during the Bourbon Restoration (1814-1830), when French thinkers sought to reconstruct a heroic past to repair the rupture with French history wrought by the Revolution, did the "Gothic" Middle Ages experience revival and respect. Historians like Michelet and Guizot; writers like Hugo, Chateaubriand, Vigny; philosophers like Cousin, Royer-Collard, de Biran conceived new ways of looking at French history, where the Middle Ages inspired a new hybrid called "medievalism." Medievalism enabled the transformation of "Gothic" into the modern meme "Goth," with its overtones of apocalypse and mysticism. This seminar will trace the culture, history, and politics underlying the evolution of Romanesque and Gothic from the 11th to the 14th centuries. This medieval scenario will then serve as a backdrop against which to view the politics, history, and culture of the Bourbon Restoration when the reinvention of the Middle Ages by history and literature inspired a trajectory of national consciousness from abjection to the sublime.
Instructor(s): S. Nichols
Area: Humanities
Writing Intensive.

AS.211.707. Film and Philosophy: The Surrealist Cinema of Alejandro Jodorowsky.
The films of Chilean cult director Alejandro Jodorowsky have confounded, infuriated, and intrigued critics and audiences alike throughout his 50-plus-year career. In this seminar we will examine the expanse of his cinematic production in order to delve into fundamental philosophical questions of representation, violence, and the relation between visual imagery and poetry.
Instructor(s): W. Egginton
Area: Humanities
Writing Intensive.

AS.211.711. Adapting Myths for the Screen.
In this course we will look at examples of adaptations of sacred narratives for the screen from Pasolini's adaptations of the gospels to Disney's adaptations of Grimm, and the recent boom of 21st century fairy-tale films; we will be reading Jack Zipes' The Enchanted Screen, and Fairy-tale Films Beyond Disney, ed. Jack Zipes, and Sacred Narratives: Readings in the Theory of Myth, ed. Alan Dundes, among others.
Instructor(s): B. Wegenstein
Area: Humanities
Writing Intensive.
AS.211.714. Ariadne’s Threads: Metamorphosing Mythologies. Abandoned by Theseus, Ariadne lamenting on the shore of Naxos embodies one of the most powerful tropes in literature and the arts. The fate of the heroine who helped Theseus out of the labyrinth became herself a thread (indeed, an inexhaustible series of threads) running across the ages and populating the imagination of poets, painters, composers. After exploring in detail the classical sources that canonized Ariadne’s myth (Catullus, Carmina, 64; Ovid, Heroides, 10) as well as references to the myth found in other classical authors (Homer, Hesiod, Pausanias, Plutarch, Propertius), we will turn to the reception of Ariadne in literature and music (Ariosto, Rinuccini-Monteverdi, Haydn, Nietzsche, Straus-Von Hofmannsthal). The analysis of the various case studies will focus on the rhetorical and poetical devices used by poets and composers to reenact the vocal features of Ariadne’s lament.
Instructor(s): E. Spinner
Area: Humanities.

AS.211.754. Modernist Primitivism. This course will explore the aesthetics and politics of primitivism in European modernity, focusing on the visual arts and literature in German and Yiddish, but looking at the wider European context, including France and Russia. We will begin with the backgrounds of primitivism in Romanticism, looking especially at its ethnographic and colonial sources. We will then focus on the presence of anthropological and ethnographic discourses within various registers of modernist thought, literature, and visual culture, with special attention to visual and literary primitivism. Our central concerns will include: the attempt to create a modernist aesthetics grounded in ethnography; the primitivist critique of modernity; the place of primitivism in the historical avant-garde; the development of the notion of “culture” in modernity; and the aesthetics of modern ethnic and national identity. Key thinkers, artists, and writers to be considered include Herder; Gauguin; Picasso; Wilhelm Worringer; Carl Einstein; Hannah Höch; and Emil Nolde.
Instructor(s): S. Spinner
Area: Humanities.

AS.211.791. Film Theory and Critical Methods. Placed at the crossroads of aesthetics and politics, psychology and economics, the history of technology and popular culture, film has emerged as the interdisciplinary object of study par excellence. Based on intensive weekly viewing and on classic and contemporary statements in film theory, this seminar—required for the Graduate Certificate in Film and Media—opens up questions of film language, authorship, genre, spectatorship, gender, technology, and the status of national and transnational cinemas. Cannot be taken if student took any of AS.212.791, AS.213.791, AS.214.791, or AS.215.791
Prerequisites: Cannot be taken if student took any of AS.212.791, AS.213.791, AS.214.791, or AS.215.791
Instructor(s): D. Schilling
Area: Humanities.

AS.211.875. GRLL CPT Research Practicum.
Instructor(s): Staff
Area: Humanities.

AS.211.894. Independent Study - Portuguese Culture.
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.

AS.212.150. Freshman Seminar: Before the Selfie. Autobiography and Self-Portraiture in Text and Photography. 3.0 Credits.
What strategies do contemporary writers and artists use to project a public image of a private self? How do emergent technologies impact the representation of the autobiographical self in relation to community? Focused on the history and present-day uses of literary and photographic self-portraiture in France since the Second World War, this course explores themes of Jewish identity, gay and queer subjectivity, and feminist critique by asking how we view others picturing themselves, illuminating our understanding of the construction of selfhood. Course taught in English, based on works translation from the French.
Instructor(s): A. Rogobete
Area: Humanities.

AS.212.170. Freshman Seminar: Writing the Great War. French Literature and World War I. 3.0 Credits.
This course examines literary texts engaging with WWI and related topics such as class struggle, gender conflicts, and colonialism. Authors studied include H. Barbusse, J. Cocteau, L.F. Celine, A. Malraux. Course taught in English.
Instructor(s): C. Benaglia
Area: Humanities.

AS.212.205. Winter Is Coming: Writing and Rewriting French Dark Ages. 3.0 Credits.
This course will not aim at drawing the exhaustive literary landscape of French Middle Ages, neither will it be a Comparative Literature or History class. It may be considered a gateway to French Medieval literature, given that the Modern Fantasy has obviously improved the last decades, the latter being built as a rewriting of Medieval themes and Western European folklore. Looking at texts originally written in Old French, including prose and poetry, but also at the French Medieval iconography, we will try to understand the old roots of the Modern and so popular (but sacrificing) Fantasy Literature. Basic French will be required.
Instructor(s): M. Alhinho
Area: Humanities.

AS.212.225. The Letter of the Law in 18th-c. France. 3.0 Credits.
Law: is it a science or an art? Fiction writers as well as jurists produce texts that relate to and often inflect social, moral and political values. However, these affinities are often a source of deep tension. In this course, we will be investigating the nebulous contours of binary concepts such as literature and belles lettres, jurisdiction and audience, public and private affairs, and mercy and justice, as “subjects” evolve into “citizens” in 18th-century France. After establishing a conceptual framework via juridical heavyweights such as Leibniz and Montesquieu, we will weave our way through the 18th century, moving between the increasingly similar spaces of the courtroom and the stage, before finally ending up at the foot of the guillotine, with Marie Antoinette and Maximilien Robespierre. Taught in English, but French minor/major credit possible by completing written work in French and by attending a weekly discussion section conducted in French. Students interested in the 4-credit French option should enroll in section 2. All others should enroll in section 1.
Special Notes: This course is meant to be a small class experience. Enrollment limits will be strictly enforced.
Instructor(s): N. Karam
Area: Humanities.
AS.212.229. French New Wave. 3.0 Credits.
An exploration of the major films and directors of the French New Wave that is also designed to help students consolidate their skills in the analysis of film. The course will examine the origins of the French New Wave, looking at the directors as critics and as passionate film fans, along with the institutional and historical context of the films. It will also ask how the French New Wave changed the process of filmmaking, and transformed the way we think about the work of the director--inspiring more vocations in filmmaking than any other movement in cinema history. Conducted in English.
Instructor(s): S. Roos
Area: Humanities.

AS.212.304. Paris Souterrain: Paris Underground. 3.0 Credits.
This course will track uses of "the underground" in major canonical and peripheral literary works in the nineteenth century. Readings will include works by Balzac, Baudelaire, Hugo, and Zola.
Prerequisites: AS.212.334 OR HA.212.334
Instructor(s): R. Powers
Area: Humanities.

AS.212.308. The Battle of the Sacré Coeur in Fin-de-Siècle Paris. 3.0 Credits.
This interactive course analyzes the stakes underlying the construction of Paris' controversial Sacré-Coeur Basilica in Montmartre. In the light of heated 19th-century debates on moral authority that opposed religious believers and partisans of a secular state inspired by a scientific ethos, we will consider how the advocates of both sides use specific rhetorical techniques in the public domain (newspaper articles, caricatures, speeches) and artistic devices (paintings, literary writings) to convince their audience of the validity of their claims. In other words, it is all about propaganda. The course will open out onto contemporary debates that show similar ethical conflicts. Recommended Course Background: AS.210.301 or AS.210.302.
Instructor(s): K. Cook-Gailloud
Area: Humanities.

AS.212.316. Poetry as Performance: Modern and Contemporary Voices from France. 3.0 Credits.
From the earliest decades of the 20th century onward, French poets nourished by European avant-garde artistic movements (futurism, dadaism, cubism) conducted radical experiments with typography, sound, and public performance. Poets freed their object from "traditional" poetic expression and, in a quest to explore such technologies as printing, sound recording, and film, gave their practice a newly public orientation. At the same time, other poets would shy away from performance to focus on language as a technology in itself (textualism, the early Oulipo); on objects (Ponge); or on the expression of the subject (neo-lyricism). Based on close readings of, and listening to, works by Apollinaire, Ponge, Bonnefoy and Heidsieck among others, this course aims to sketch the diverse voices and voix that have ushered French poetry into the digital age. Taught in French.
Instructor(s): V. Adams-Aumeregier
Area: Humanities.

AS.212.318. Women in Pre-Modern French Literature. 3.0 Credits.
This course will examine the changes in the relationship of women to literature in France up to the French Revolution from several points of view: (1) What were the social and intellectual contexts of gender distinctions? (2) How did men writing about women differ from women writing about women? (3) How were these questions affected by the changing norms of literary production? Texts by Marguerite de Valois, Mme. de Sévigné, Molière, Mme. de Lafayette, Prévost, Diderot, Rousseau, Mme d'Epiney and Revolutionary memorialists
Instructor(s): W. Anderson
Area: Humanities
Writing Intensive.

AS.212.326. Listening In: The Sounds of French Poetry. 3.0 Credits.
The sounds and rhythms of French language poetry have evolved sharply over time. How can listening to the musicality of poems enhance our understanding of poetic meaning? To attune the ear, develop poetic voice and a heightened sensibility to the visual and aural experience of poems, students will listen to, record, recite and translate poetry. Readings will range from classical works such as Racine's Phèdre and Molière's Tartuffe to poets such as Baudelaire, Hugo, Mallarmé, and Tzara. Recommended Course Background: AS.212.333 or AS.212.334
Instructor(s): J. Whitaker
Area: Humanities
Writing Intensive.

AS.212.331. Paris 1900: the Great World Exhibition and the Beginning of Modernism. 3.0 Credits.
Held in Paris, the 1900 World's Fair introduced to the modern world such striking innovations as subways, moving images on giant screens, escalators, colossal electrical shows, and the first painting by Pablo Picasso to be shown on French soil. Focused on key cultural and socio-political events surrounding this momentous turn-of-the-century display of wealth and power, this course examines the paradoxes of a modernizing French nation which even as it promoted individual rights alongside technology and economic growth was headed towards world conflict. Students will perform original research by exploring the rare book collection at JHU as well as the substantial digital archives now documenting the period.
Instructor(s): K. Cook-Gailloud
Area: Humanities.

AS.212.333. Introduction à la littérature française. 3.0 Credits.
Introduction à la Littérature française I and II propose reading and discussion of texts of various genres from the Middle Ages to the 21st century. This sequence is intended as an introduction to the methods, questions, and techniques of textual analysis through intensive reading, discussion, and production of written texts. Introduction à la littérature française I covers some of the greatest classics of French literature and thought from the Middle Ages to the Revolution. The two semesters may be taken in either order. This sequence is a pre-requisite to all further literature courses. Students may co-register with an upper-level course during their second semester. Recommended Course Background: AS.210.301-AS.210.302 or at least one semester of AS.210.301-AS.210.302 with a grade of A and written permission of the instructor. For more info see http://grfl.jhu.edu/french/undergraduate/courses/
Prerequisites: AS.210.301 AND AS.210.302
Instructor(s): E. Russo; W. Anderson
Area: Humanities
Writing Intensive.
AS.212.334. Introduction à la littérature française II. 3.0 Credits.
Readings and discussion of texts of various genres from the Middle Ages to the 20th century. The two semesters (212.333 and 212.334) may be taken in either order. This sequence is a pre-requisite to all further literature courses. Students may co-register with an upper-level course during their second semester. Introduction à la littérature française II covers the time period from the Revolution to the present.
Prerequisites: AS.210.301 OR AS.210.302 or at least one semester of AS.210.301 or AS.210.302 with a grade of A and written permission of the instructor.
Instructor(s): J. Neefs
Area: Humanities
Writing Intensive.

AS.212.336. The Violence of the Stage. 3.0 Credits.
Modern French drama since World War II has been a privileged space for public representations of violence. Featuring works by playwrights from Sartre to Réza and from Beckett to Mouawad, this course examines the meanings and functions of violence in performance (murder, terrorism), as well as different possibilities for theatrical staging and film adaptation.
Recommended Course Background: AS.212.334
Instructor(s): G. Briex
Area: Humanities.

AS.212.339. Constructing Poe: How 19th Century France created an icon. 3.0 Credits.
Just who was Edgar Allan Poe, and who is he today? This course explores how and why a multitude of 19th-century French writers constructed Poe as an author. Through selected works from Hugo, Baudelaire, Mallarmé, and Verne, to be read alongside Poe’s original texts, we will study the means by which these figures projected uniquely French versions of this mysterious American writer the better to stake out their own literary revolutions. By exploring versification, translation,adaptation, and the role of the proper name, we will examine the broad literary history that underlies contemporary understandings of Poe. No knowledge of French is required.
Instructor(s): A. Alexander
Area: Humanities
Writing Intensive.

AS.212.340. Topics in French Cinema: Immigration, identité, différence culturelle. 3.0 Credits.
An exploration of immigration, identity, and cultural differences through the lens of recent French and Francophone films. Focus on discussion and analyses of film sequences in class and on oral presentations. Students will have the opportunity to progress in vocabulary, oral expression, and in critical analysis. Films studied include works of Kassowitz, the Dardennes, Kechiche, Haneke, and Audiard. Conducted in French. Recommended course background: completion of AS. 210.301 or equivalent score on Placement test.
Instructor(s): S. Roos
Area: Humanities.

AS.212.341. Power and Resistance: Approaches to French Political Thought. 3.0 Credits.
Even as a coherent, rational conception of state power emerged in France in as early as the Renaissance, French thinkers never stopped challenging the ways by which power justified itself in order to foster obedience and consensus. In so doing, they focused critically as much on the claims of sovereignty issuing from the top as on the willingness of the governed to submit to them. The course will examine the dialectic between the legitimation and delegitimation of power, from the Renaissance wars of religion to the Revolution and beyond: the haunting fear of the corruption and death of the political body; the notion of permanent crisis; the right to revoke the social contract; the reach of power in shaping minds and bodies. Readings may include works by La Boëtie, Bodin, Bayle, Rousseau, Sade, Saint-Just, Constant, Maistre, Tocqueville, Foucault, Lefort and Rancière. Readings and discussion in English.
Instructor(s): E. Russo; W. Anderson
Area: Humanities.

AS.212.342. Topics in French Cinema: Le crime dans le cinéma. 3.0 Credits.
Focus on French crime films, thrillers, and films noirs. Films studied will include movies by Jean-Pierre Melville, Dassin, Godard, Chabrol, French responses to US genre movies and to Hitchcock, and contemporary versions of the crime film in France (Jacques Audiard, Michael Haneke). Strong focus on discussion and analyses of film sequences in class and on oral presentations. Additional assignments will involve vocabulary and grammar study. Recommended Background: 210.301 or 210.302 or equivalent score on placement test
Instructor(s): S. Roos
Area: Humanities.

AS.212.344. Topics in French Cinema: Amour, Sexualité, Mariage. 3.0 Credits.
What is the nature of desire? Where does it come from, and what determines and conditions it? What do we fall in love with when we fall in love? An exploration of a series of films that ask essential questions about the psychological, political, and social stakes of human love, desire and sexuality, and about the institution of marriage. Focus on discussion and analyses of film sequences in class and on oral presentations. Students will have the opportunity to progress in vocabulary and oral expression. Films studied include works of Truffaut, Godard, Bunuel, Kechiche, Haneke, Breillat and Audiarid. Requirements for this course: completion of 210.301, 201.302, or equivalent score on Placement test.
Instructor(s): S. Roos
Area: Humanities.

AS.212.353. La France Contemporaine. 3.0 Credits.
Students will explore contemporary French society and culture through a wide variety of media: fiction and non-fiction readings (graphic novels, news periodicals, popular magazines), films, music, art, websites, and podcasts. A diverse range of hands-on activities in addition to guided readings will help students develop cultural awareness as we discuss topics such as education, politics, humor, sports, cuisine, immigration, slang, and national identity, as well as the historical factors that have influenced these facets of French and francophone culture.
Recommended Course Background: AS.210.301 or AS.210.302 or permission of instructor.
Prerequisites: Students may not have taken AS.211.401.
Instructor(s): A. Wuensch
Area: Humanities.
AS.212.358. Writing the Great War: French Literature and World War I. 3.0 Credits.
This course examines literary texts engaging with WWI and related topics such as class struggle, gender conflicts, and colonialism. Authors studied include H. Barbusse, J. Cocteau, L.F. Celine, A. Malraux. Course taught in French.
Prerequisites: AS.210.302 OR AS.212.333 OR AS.212.334 OR AS.211.401 OR AS.211.402
Instructor(s): C. Benaglia
Area: Humanities.

AS.212.362. Ecrire l'héroïsme au féminin [Writing Heroism in the Feminine]. 3.0 Credits.
How can we define a heroine? What distinguishes heroines from mere female protagonists? Who are the main heroines to have marked the French literary tradition? This course examines how writers have transformed the notion of heroism inherited from Ancient Greece and Rome to lend it different and distinctly gendered shapes in the figure of the female hero: bravery, scandal, crime, sacrifice, nationalism. Focus will be placed on the evolution of the concept from the 17th century to the end of the 20th century in novels and plays by Racine, Madame de Lafayette, Prevost, Balzac, Maupassant, Anouilh, Wittig, and Condé. Recommended Course Background: AS.212.333 or AS.212.334.
Instructor(s): L. Cariou
Area: Humanities.

AS.212.364. Not Another Fashion Victim: Shopping, Style, and Consumer Culture in Paris. 3.0 Credits.
Paris has long been considered a world center for fashion. This course examines the development of style and of consumer culture in the French capital since the 19th century. Readings from key historical and literary texts will lay the groundwork for understanding modern-day consumption and theories of fashion, taste, and social distinction. We will consider visual and print sources related to Parisian fashion (paintings, fashion plates, magazines) as well as films. Taught in English, but French minor/major credit possible by completing written work in French and by attending a weekly discussion section conducted in French. Students interested in the 4-credit French option should enroll in section 2. All others should enroll in section 1.
Instructor(s): K. Haklin
Area: Humanities.

AS.212.365. Twisted Roots: Writing "Creole" in the French Caribbean. 3.0 Credits.
This course examines rootedness and hybridity in contemporary literary and critical works from the French Caribbean, exploring the act of writing "Creole" as illustrative of innovative thought-constructs. French students will read and write in French and should register for section 02; other students will read translations and should register for section 01. Discussions will be conducted in English.
Instructor(s): R. Loescher
Area: Humanities.

AS.212.368. Avant la Révolution: littérature et critique sociale en France (1500-1789). 3.0 Credits.
This course will explore some key moments in the literature and thought of pre-revolutionary France, focusing on the ways that Renaissance and Enlightenment authors used literature to create alternative spaces from which to critique and rethink the worlds in which they lived. Readings will include Rabelais, Montaigne, Fontenelle, Montesquieu, Voltaire, Diderot, and Rousseau. Assessed work will include an oral presentation and a research paper on a topic of your choice. Throughout the course you will acquire finer critical and analytical skills, polish your oral and written French, and familiarize yourself with advanced research methods in the human sciences. Recommended course background: at least one semester of Introduction à la littérature française (I or II). For more info see http://grill.jhu.edu/french/undergraduate/courses/
Prerequisites: Pre-reqs: AS.212.333 OR AS.212.334
Instructor(s): S. Miglietti
Area: Humanities
Writing Intensive.

AS.212.383. Ecrire l’ailleurs : littérature, voyage, utopie. 3.0 Credits.
Distant places have always exerted a particular fascination on the human mind. Many classics of European literature feature journeys to foreign lands, whether real or imaginary: from More’s Utopia and Ariosto’s Moon, to Bacon’s New Atlantis and Swift’s Lilliput. Through a range of examples from early modern France, we will explore the complex relationship between travel and the literary imagination. Topics to discuss include: the style, status, and models of travel literature; cultural encounter, Otherness, and self-representation; imaginary places and social critique. Readings will include fictional texts like Cyrano’s Estats et empires de la Lune, genuine travel reports such as Champlain’s Voyage au Canada, and works that skilfully mix fiction and reality, as in Montesquieu’s Lettres persanes.
Instructor(s): S. Miglietti
Area: Humanities
Writing Intensive.

AS.212.410. Toward Modernity: France 1848-1885. 3.0 Credits.
The second half of the Nineteenth Century in France is a period of dramatic political, social, historical, and technical experiments and profound changes. It is as well a fascinating period of artistic creativity in Literature and Art, considered as the rise of Modernity. We'll read texts by Hugo, Flaubert, Zola, Jules Verne, Baudelaire, Rimbaud, Mallarmé, Tocqueville, Michelet, and study works by Courbet, Manet, Monet, Berlioz, Saint-Saëns, Fauré. Co-listed with AS.211.410
Instructor(s): J. Neefs
Area: Humanities
Writing Intensive.
AS.212.417. Texts of/on the Terror from the French Revolution. 3.0 Credits.
Taught in French. During the first half of the semester we will take advantage of the renewed interest in scholarship on the Terror to deal with some of the most famous examples of Revolutionary rhetoric, focusing especially on the trial of Louis XVI and the late speeches of Robespierre. During the second half of the semester we will read literary works produced during the Terror and accounts of the Terror from authors such as Balzac, Dumas, and Michelet. We will be asking questions such as: What was the Reign of Terror and to what extent was its project dependent on public discourse? Why and how does the nature of public oratory change? What happens to definitions of "the literary" and of authorship in a terroristic context?
Instructor(s): W. Anderson
Area: Humanities

Writing Intensive.

AS.212.421. Textes et Performances: le théâtre français du 17e au 19e siècle. 3.0 Credits.
Le théâtre français, des classiques aux romantiques. There will be a performance component to this course. Recommended co-registration with 210.312. Acting French. For more information, see http://www.wilda.org/Courses/CourseVault/Undergrad/18thTheaterUG/SyllabusTheater.html
Instructor(s): W. Anderson
Area: Humanities.

AS.212.422. Esthétique et politique: autour des révoltes de Mai 68. 3.0 Credits.
What prompts a society to turn its back on tradition and to topple its most sacred institutions? This exploration of the French "Sixties" highlights the cultural ferment behind the historic student/worker revolts of May/June 1968, which brought the nation to a standstill. Through novels, essays, songs, and films, we will examine linkages between authority and desire; thought and action; revolutionary aspiration and the consequences of failed revolt.
Prerequisites: AS.211.401 OR AS.212.353
Instructor(s): D. Schilling
Area: Humanities.

AS.212.429. Honors Thesis Prep. 1.0 Credit.
This course will meet three times during the Fall semester to enable all French majors to prepare their thesis subject, thesis bibliography, and abstract prior to the writing of the Senior Thesis (AS.212.430) in the Spring semester of their senior year. This course is required of all French majors and must be taken during the Fall semester of their senior year. Schedule TBA upon consultation with the class list, as there are only three group meetings. The rest of the meetings are in individual appointments with the DUS or another chosen French professor.
Prerequisites: AS.212.333-334 and either prior enrollment or concurrent enrollment in AS.210.417 Eloquent French
Prerequisites: AS.210.417;AS.212.333 AND AS.212.334
Instructor(s): Staff
Area: Humanities.

AS.212.430. French Honors Thesis. 3.0 Credits.
An in-depth and closely supervised initiation to research and thinking, oral and written expression, which leads to the composition of a senior thesis in French. Recommended Course Background: AS.212.429
Instructor(s): D. Schilling; E. Russo; J. Neefs; W. Anderson
Area: Humanities
Writing Intensive.

AS.212.431. Style, Gender and Politics from Marie-Antoinette to the Burqini. 3.0 Credits.
From effeminate kings, to slutty queens, to post-revolutionary dandies, to the manifest invisibility adopted by some French citizens today, debates on the gendering and styling of political bodies have always been central to power struggles in France. Students will read from sociology, history and literature in order to understand the complex interplay among fashion, gender and political identity. Taught in English, but French minor/major credit possible by completing written work in French and by attending a weekly discussion section conducted in French. Students interested in the 4-credit French option should enroll in section 2. All others should enroll in section 1. Special Notes: This course is meant to be a small class experience. Enrollment limits will be strictly enforced.
Instructor(s): E. Russo
Area: Humanities.

AS.212.432. The Dreyfus Affair: Lying for Truth. 3.0 Credits.
In 1894 French military captain Alfred Dreyfus was found guilty of a crime of treason he did not commit. The true reasons for his arrest are still under debate today: was this a sheer act of antisemitism? Why did the army create false proof against a man they knew was innocent? What was the role of the press in propagating the Affair? This course proposes to approach the Dreyfus Affair in all its complex forms, while encouraging students to carry out original and innovative research based on a wide range of resources (caricatures and articles in the press, pamphlets, paintings, films, music, photographs, court transcripts, government archives, private letters, and hopefully more).
Instructor(s): K. Cook-Gailloud
Area: Humanities.

AS.212.442. Souvenirs de la France occupée 1940-1944 [Memories of Occupied France, 1940-1944]. 3.0 Credits.
How have writers and filmmakers active in France since World War II shaped the collective memory of German occupation, deportation, and liberation, both forging and contesting myths of the French nation through the wartime experience of resistance and collaboration? In what ways do distinct modes of written and audiovisual expression (fiction, testimony, documentary) conjoin with individual or group perspectives to color our understanding of France’s "dark years"? See full description here: http://grll.jhu.edu/french/undergraduate/courses/
Prerequisites: AS.212.334 OR (AS.211.401 AND AS.211.402)
Instructor(s): D. Schilling
Area: Humanities.
German and Romance Languages and Literatures

AS.212.445. French romanticism across the arts. 3.0 Credits.
This course is designed to introduce you to a glamorous moment in French culture and the arts, namely the first half of the nineteenth-century. This was a time when talent and ingenuity, and a desire to mend the wounds left by war and terror created an aesthetic movement that brought its own form of revolution. What was it like then to be in Paris in the theater, at the ballet, in literary salons, at concerts, at the opera? How did such “cultural productions” shape the imagination and nourish the creative endeavors of many artists and writers? As there was no camera to document this moment, we’ll need to rely on writers to describe or, even better, evoke a universe of new aesthetic experiences that richly shaped the nineteenth-century literary world. What were these new visions and personal dreams? Why the exoticism? What was it like to live in a time that made it possible to carry your heart on your sleeve without ridicule? Literary writings will be our archive, as we explore such cultural offerings as romantic ballet, the stage (both as opera and theater), collaborations between musicians and writers, and translations of major romantic themes across the arts. With the help of texts and visual as well as musical examples, we will try to imagine what it means to declare yourself “un romantique.” Modern film excerpts and productions of romantic art will help us see the lasting effects of this period of cultural effervescence. Among the authors and creators whose work we will study are Victor Hugo, Nerval, Gautier, Baudelaire, Chopin and George Sand, Berlioz, Taglioni, as well as Shakespeare in French. Recommended Course Background: AS.212.302 and either AS.212.333 or AS.212.334
Instructor(s): E. Ender
Area: Humanities.

AS.212.449. France, terre des migrations [French Histories of Migration]. 3.0 Credits.
Comme le Canada ou les États-Unis, la France est une grande terre d’immigration qui depuis le 19e siècle a accueilli sur son sol des populations du monde entier. En examinant témoignages, textes de fiction et films documentaires, nous suivrons les expériences contrastées de diverses vagues de migrants chassés par la faim, le chômage ou les persécutions. Quels mécanismes ont favorisé ou freiné l’intégration économique, sociale et civique de ces migrants qui ont rejoint la République française? Que veut dire “être immigré” aujourd’hui?
Prerequisites: AS.211.401
Instructor(s): D. Schilling
Area: Humanities.

AS.212.446. The Pleasures of Tragedy. 3.0 Credits.
Why do we experience pleasure in watching representations of bad things happening to people on stage? Are the emotions aroused by tragedy ethical or immoral? These are just some of tragedy’s many paradoxes, which have been explored by philosophers over time, from Plato to Augustine, to Rousseau, to Hume. This course proposes to explore some of the enigmas and conundrums raised by a genre which everybody agrees cannot be defined by common formal and thematic features, but which we all feel able to recognize when we see it. Is there an essence of tragedy that endures from 5th century Greece to today? Or are the things that make us call a play tragedy radically different according to time and place? How is tragedy related to philosophy, religion and politics? Tragedy has been declared in turn “dead” (killed by Christian notions of redemption, by political utopianism, by philosophical optimism, by the dissolution of language, etc.) and renewed, regenerated (through the sense of the absurd, postmodern immanence, irredeemable violence) – and indeed, there has been a flourishing of the genre in France in the late XXth century. Through readings of a selection of plays, both ancient and modern, and theoretical works, we’ll examine the metamorphosis of the tragic hero and heroine, the issues of gender, moral responsibility and the management of the spectator’s emotions. Readings from Sophocles, Aristotle, Corneille, Racine, Hegel, Kierkegaard, Anouilh, Sartre, Cesaire, Koltès, Gably. Course in French.
Prerequisites: AS.210.301 AND AS.210.302
Instructor(s): E. Russo
Area: Humanities
Writing Intensive.

AS.212.466.限-Limit-Experience, Limit-Texts. 3.0 Credits.
Why tell stories? What power do writers wield against the disorder of life? How do literary narratives measure up to experiences that usher us beyond the limits of the imaginable? In this course we will examine modern and contemporary works in French that engage with such limit states and situations as combat, imprisonment, madness, terminal illness, and corporeal transformation. Authors to be considered include Carrère, Chevillard, Darrieussecq, Delbo, Duras, Guibert, and Volodine.
Instructor(s): D. Schilling
Area: Humanities.

AS.212.470. Censorship in Language and Practice. From the Ancien Regime to Democracy. 3.0 Credits.
An exploration of the boundaries of acceptability when speaking about religion, government, sexuality and gender. Students will learn about the political, theological and legal basis of blasphemy and punishable behavior, and how they have changed from the time of divine-right monarchy to contemporary laïcité. Selected readings ranging from the clandestine culture of free-thinkers and rakes in the 17th century, to the trials and causes célèbres of the Enlightenment, to modern-day democratic polemics.
Prerequisites: AS.210.302
Instructor(s): E. Russo
Area: Humanities.
AS.212.471. Jules Verne. 3.0 Credits.
An overview of the corpus of the author of the "Voyages extraordinaires". The patron saint of steampunk authors explored through his novels the transformation of the modern world resulting from the explosion of technological advances in the industrial age, yet he was also an astute and erudite historical thinker, an amateur anthropologist whose work reflected many of the prejudices and challenges of his colonizing contemporaries. A dabbler in the new human sciences and their role in the development of cultural models, he provides a unique entryway into the fin-de-siècle French mind set. This class will be taught in French. For more information, see http://www.wilda.org/Courses/CourseVault/Undergrad/Verne/Syllabus.html Recommended Prerequisites AS.212.333 or AS.212.334
Instructor(s): W. Anderson
Area: Humanities
Writing Intensive.

AS.212.476. Into the Wild: Environmental Imagination across the Ages. 3.0 Credits.
How have people over the centuries construed their relationship to the natural environment? What literary and artistic traditions have shaped Western attitudes to nature, and how have these traditions and attitudes changed over time? "Into the Wild" will explore these questions through a range of textual and visual sources, including works in both verse and prose (e.g. pastoral and Romantic poetry, early exploration accounts, scientific treatises and works of science-fiction, short-stories and novels), paintings, engravings, music, and film. Course work includes visits to JHU's Special Collections and to the Baltimore Museum of Art. Recommended background: AS.212.333 or AS.212.334 either previously or concurrent
Instructor(s): S. Miglietti
Area: Humanities
Writing Intensive.

AS.212.478. Guillaume de Machaut: exploring medieval authorship in the digital age. 3.0 Credits.
Using new websites devoted to the lyrics and music of Guillaume de Machaut, the foremost poet and composer of the 14th-century French royal court, this seminar will explore the role of music and literature during the Hundred Years War. The course aims to give students a thorough grounding in Machaut's literary and musical works, while also introducing them to digital tools to view and analyze original illustrated musical manuscripts of his work. Critical analysis of Machaut's work will be assessed not only through more traditional essay writing, but also through the creation of a multimedia digital edition of a section of his oeuvre using Omeka exhibition software. The course is designed so that no prior knowledge of musical notation or medieval French is necessary.
Instructor(s): T. Rose-Steel
Area: Humanities
Writing Intensive.

AS.212.501. French Independent Study. 3.0 Credits.
Instructor(s): D. Schilling; E. Russo; J. Neefs; W. Anderson.

AS.212.502. French Indept Study-Lit. 3.0 Credits.
Instructor(s): E. Gonzalez; J. Neefs.

AS.212.596. Independent Study - Spanish. 3.0 Credits.
Instructor(s): E. Gonzalez.

AS.212.598. Internship. 1.0 Credit.

The development of the drame bourgeois and the theater criticism of the French Enlightenment. Authors to be studied include Racine, Le Sage, Marivaux, Voltaire, Diderot and Beaumarchais. For more information, please see http://www.wilda.org/Courses/CourseVault/Grad/Theater/Syllabus.html
Instructor(s): W. Anderson.

Readings in Balzac, Stendhal, Hugo, Musset and Nerval, plus viewings of Géricault, Delacroix, Daumier. Theories of Romanticism, from Baudelaire to present will be examined and commented as well.
Instructor(s): J. Neefs
Area: Humanities
Writing Intensive.

What if Rousseau's description of the sentiment de l'existence were to join to the models of consciousness Damasio develops in The Feeling of What Happens? This course explores aspects of consciousness in French literature (Rousseau, Sand, Nerval, Amiel, Flaubert, Valéry, Proust, Sartre) in a dialogue with recent texts in theory, philosophy, neuroscience (e.g. Poulet, Merleau-Ponty, Sartre, Scarry, Noël, Humphrey, Damasio, Sacks).
Instructor(s): E. Ender
Area: Humanities
Writing Intensive.

AS.212.692. Research Methods.
Texts have lives. From handwritten manuscript to digital format, the various incarnations of the literary text have implications for literary scholarship. This course examines the many lives of a literary text and the issues of access, retrieval, and research. From online resources to the core printed reference works, this course acquaints graduate students with the range of scholarly apparatus in the field of literary studies.
Instructor(s): T. Rose-Steel.

AS.212.696. Literature Confronts Science: Zola.
Zola worked with the theories of heredity of his time in the Rougon-Macquart novels. But he also attempted to use his understanding of biology and thermodynamics to reform the theory of the novel in general. This course will examine these two different effects of science on literature and try to see what leads an author to undertake such a project. For a more extended description, please see http://www.wilda.org/Courses/CourseVault/Grad/Zola/Syllabus.html. Advanced undergraduates with sufficient background may register for this course with permission of the instructor.
Instructor(s): W. Anderson.

AS.212.699. Cultures of Criticism from the Classics to Foucault.
From fault-finding to the crossover of aesthetic and political judgment, criticism never loses sight of its medical cognates critical and crisis. This course examines the emergence and the transformations of critical judgment in the arts, culture and politics, from the early days of its collusion with French monarchical propaganda, to the critical genealogies of the Enlightenment, to the postrevolutionary critique of history, to Foucault's critique of practices of veridiction. Works by Perrault, Bayle, Diderot, Rousseau, Tocqueville, Cassirer, Koselleck, Derrida, Barthes, Bourdieu, Foucault. Taught in English; most texts available in translation, but knowledge of French recommended.
Instructor(s): E. Russo
Area: Humanities.
AS.212.705. Fictions d’espace: géopoétique du roman de langue française.
En quoi consiste et par quels moyens se construit l’espace dans les fictions littéraires? Quelles fonctions y jouent les toponymes, les descriptions de lieux ou les trajectoires des personnages? Quels contrats l’écrivain peut-il passer avec son lectorat à l’égard du statut des espaces traversés et décrits, qu’ils se fondent sur le “réel” ou qu’ils soient fabriqués de toutes pièces? Seront abordées dans cette introduction à la géopoétique narrative des œuvres de Balzac, Maupassant, Giono, Gracq, Duras, Chamoiseau, Sony et Echenoz entre autres.
Instructor(s): D. Schilling
Area: Humanities
Writing Intensive.

AS.212.707. French Documentary Filmmaking.
Overview of the history of French documentary filmmaking featuring works by Cavalier, Depardon, Epstein, Malle, Marker, Painlevé, Philibert, Resnais, Rouch, Simon, Varda, and Vautier. Emphasis will be placed on the rhetorical functions of editing and on the relation forged among filmmakers, their subjects, and the public. Extensive weekly viewing is required.
Instructor(s): D. Schilling
Area: Humanities.

AS.212.719. Enlightenment and Revolution.
Writing Equality: the French Revolution. Enlightenment authors whose work is relevant to the Revolution (Montesquieu, Rousseau, Condorcet, etc.), Revolutionary authors and orators, and 19th-century authors like Balzac and Stendhal or historians like Tocqueville and Michelet who use literary topoi to come to terms with the Revolution.
Instructor(s): W. Anderson
Area: Humanities
Writing Intensive.

Victor Hugo as a prominent figure in the Nineteenth Century France and in Europe, and in French Literature. Poetry, Novels, Theater, Essays, outstanding political involvement, we will examine all aspects of Hugo’s works and poetics, as action in History and Modern politics. Close reading of poems from Les Contemplations and La Légende des siècles, of Le Dernier jour d’un condamné and Les Travailleurs de la Mer, of Hernani, and of Châtiments and some political discourses.
Instructor(s): J. Neefs
Area: Humanities.

AS.212.729. Realism: Balzac Stendhal Flaubert.
We will examine what Auerbach called « le grand réalisme », reading three notable Nineteenth Century novels: Balzac’s Illusions perdues, Stendhal’s Lucien Leuwen, Flaubert’s L’Éducation sentimentale. We will consider how a new narrative art and a new art of prose brought new ways of understanding society, history, and human life.
Instructor(s): J. Neefs
Area: Humanities
Writing Intensive.

What is personal memory? This course offers both an in-depth journey through Proust's Recherche and a way of tracing major scientific questions about the formation of memory in connection with autobiography and medical history. The process of human remembering — with its counterpart, forgetting — has emerged over the last thirty years as an extraordinarily rich field of investigation as well as of creative endeavors in the arts. Poised between literature and science, this course offers both an in-depth introduction to Proust’s ground breaking modern work on human time, A la recherche du temps perdu, and an investigation into a modern history of memory (a history that unfolds in the nineteenth and early twentieth century, and has made a surprising return in our contemporary understanding of remembrance). That Proust’s petite madeleine should have turned, in recent years, into the magical token of autobiographical recollection and provided, at the same time, an immensely productive clinical and neuro-scientific model of how memory works serves as our point of departure. That human memory is an experience and not merely a biological function — its existence depending on language — will be our running thread. Proust’s book, filled with immensely learned and complex descriptions of mnemonic processes, serves as our case-study. Proust’s investigations into remembering reveal fascinating aspects of the 19th century advances into the psychology and nosography of memory. These will in turn prompt us to read his work in light of present controversies in scientific research, as for example on the construction of memory, on “body-memory,” the interface between cognition and emotion, and the mind/brain debate. As it prompts many questions on the relation between fiction and experience, this journey through major themes of Proust’s quest for memory will invite a broader reflection on the relation between literary and philosophical investigations. Requirements: Short oral presentation and final research paper. Taught in English, reading knowledge of French desirable but not required. Most readings are available in English. Required for this course are vol. I, V, VI of In Search of Lost Time in the 2003 Modern Library edition (ISBN 978-0-375-75154 – 1 and 4 and 7). For a copy of the syllabus, with a list of main recommended readings, available in mid-June, please write to e.ender@jhu.edu
Instructor(s): E. Ender
Area: Humanities.

Throughout his life Rousseau presented himself by turns as the citizen of a Republic, a stateless outcast, the resident of a vanishing homeland of the heart, and the focal point of an international conspiracy. He invented new foundations for political communities that could never be implemented or were severely misunderstood during the revolutionary Terror. The families he portrayed were both patriarchal and defiantly anti-normative. He affirmed his desire to belong and insisted on his irreducible difference; he extolled friendship and engineered breakups. Through readings of Rousseau’s major political, autobiographical and fictional works we shall examine how and why communities, personal identity and citizenship are alternately built and destroyed. Course open to undergraduates.
Instructor(s): E. Russo.
AS.212.743. Marcel Proust, Literature and Art.
Proust's great sequence of novels À la recherche du temps perdu is also a theory of the Novel and indeed of Art. A close reading of Du côté de chez Swann, À l'ombre des jeunnes filles en fleurs, La Prisonnière and Le Temps retrouvé, will put this to the test. Required editions: Proust's Du côté de chez Swann, Gallimard, Folio, À l'ombre des jeunnes filles en fleurs, Gallimard, Folio, La Prisonnière, Gallimard Folio, Le Temps retrouvé, Gallimard, Folio, Contre Sainte-Beuve, Gallimard, Folio. The seminar is open to advanced undergrads, with authorization of the instructor.
Recommended course background: At least 2 212.3xx courses
Instructor(s): J. Neefs; M. Fried
Area: Humanities.

AS.212.750. Récits de la marge : voix périphériques et subcultures.
Examen de romans et récits modernes et contemporains où la marge (géographique, ethno-sociale, sexuée) apparaît comme un lieu de parole spécifique. L'histoire longue de la figure du 'zonard' et du 'jeune de banlieue' permettra d'interroger les processus de légitimation littéraire et l'émergence de subcultures qui suscitent des postures esthétiques novatrices. Textes de Begag, R. Camus, Charef, Chraïbi, Clébert, Collard, Djaïdani, Queneau...
Instructor(s): D. Schilling
Area: Humanities
Writing Intensive.

From exoticist features of the 1920s and 1930s and political works of the 1960s, to family sagas and personal essays looking back on a conflicted past from the standpoint of the new century, Algeria has featured prominently in the French cinematographic imaginary. The independent North African nation has likewise produced compelling narratives that address the colonial legacy, the armed struggle for independence and its aftermath. Addressing from both sides of the Mediterranean an entangled political and cultural history, this course places in critical context conflicting screen representations as well as the institutions, individuals, and publics associated with them. The course will be taught in English, however most course materials will be in French. Undergraduates may take with permission of the instructor and completion of AS.212.333 and AS.212.334. Graduate students need not have completed the prerequisite courses.
Instructor(s): D. Schilling
Area: Humanities.

AS.212.752. Récits de la marge: voix périphériques et subcultures.
Examen de romans et récits modernes et contemporains où la marge (géographique, ethno-sociale, sexuée) apparaît comme un lieu de parole spécifique. L'histoire longue de la figure du 'zonard' et du 'jeune de banlieue' permettra d'interroger les processus de légitimation littéraire et l'émergence de subcultures qui suscitent des postures esthétiques novatrices. Textes de Begag, R. Camus, Charef, Chraïbi, Clébert, Collard, Djaïdani, Queneau...
Instructor(s): D. Schilling
Area: Humanities
Writing Intensive.

AS.212.754. Classiques de la Renaissance.
In this seminar we will read two great classics of Renaissance France: Montaigne's Essais (1580, 1588, 1595), a hodge-podge of erudite and powerful introspective pieces of short prose; and Aubigné's epic poem Les Tragiques (1616), written in response to the ravages of the civil war that tore France apart in the late sixteenth century. In addition to being two masterpieces of French prose and poetry respectively, Montaigne's Essais and Aubigné's Tragiques share a number of common features, such as rich intertextual ties with ancient literary models (from Plutarch, Virgil and Seneca to the Bible) and a complex genetic history resulting from multiple waves of textual revision, both in manuscript and in print. A close reading of these works will therefore allow us to address broader issues in literary theory and practice advanced techniques for textual analysis. Open to advanced undergrads
Instructor(s): D. Schilling
Area: Humanities.

AS.212.778. Les écritures contemporaines aux confins des genres [Contemporary French Writing Beyond the Genres].
Le système des genres littéraires consacré par la vieille trinité "roman, poésie, théâtre" ne fait plus la loi. Depuis les années 1980 ont émergé en France des formes d'écriture hybrides s'appuyant sur le montage, le recyclage, le catalogue ou encore la traduction intermédiaire. Notre objet sera d'interroger le statut de l'objet littéraire et de la figure de l'écrivain dans un paysage artistico-médiaque que caractérisent la surproduction de textes et d'images et une certaine déréalisation du lien social.
Instructor(s): S. Miglietti
Area: Humanities.

AS.212.783. Diderot, Power and Representation.
A reading of some of Diderot's major works in light of his struggle to break out of imposed and self-imposed hierarchies of style and manner, and to reframe or reform radically the relationship between ethics, politics, sexuality, gender and the arts. Special emphasis on Diderot's self-representation as arbiter of taste, mediator and mentor.
Instructor(s): E. Russo
Area: Humanities
Writing Intensive.
AS.212.784. Founding Myths: Literature, Historicity, and the Nation. National identities often coalesce around historical events that acquire the status of “founding myths”. In this seminar, we will draw upon French history to discuss how literature and art (including cinema) can contribute to forging and crystallizing a series of identity-making myths. Cases to consider include the burning of Joan of Arc in 1431, the massacres of St Bartholomew’s Day (1572), and the beheading of Louis XVI in 1793. By analyzing representations of these and other historical moments through a wide range of media, we will seek to penetrate the complex relationship between literature, fiction, and historicity in making national identity—a relationship that proves particularly problematic in the case of violent and divisive events such as those mentioned above. Among the authors studied will be Villon, De Thou, D’Aubigné, Marlowe, Shakespeare, Voltaire, Michelet, Dumas, Hugo, Brecht, Anouilh, Camus. Instructor(s): S. Miglietti
Area: Humanities
Writing Intensive.

AS.213.251. Freshman Seminar: Friedrich Nietzsche. 3.0 Credits. Nietzsche’s writings continue to inform contemporary thinking about morality, psychology, art, culture, and politics. He started out as a daring scholar of Greek antiquity, went on first to advocate and then to repudiate a grand project of cultural renewal, and eventually transformed his authorial persona into the site of an unprecedented theoretical experiment in which the most cherished ideals of Western culture were turned against themselves. In discussing his works we will focus on such themes as the struggle to affirm life in the face of the challenge of nihilism, modernity, cultural decadence, selfhood and individualism, the status of nature, and the effort to overcome metaphysical thinking. Close attention will be paid to the strategies of writing through which Nietzsche negotiates the conflict between intellectual integrity and aesthetic appeal, truth and illusion. Instructor(s): M. Dornbach
Area: Humanities.


AS.213.265. Panorama of German Thought. 3.0 Credits.
German thought is a broad intellectual tradition that encompasses works in an astonishing number of fields including philosophy, aesthetics, sociology, epistemology, psychology, anthropology, history, religious studies, and cultural analysis. The most prominent representatives of this tradition include Luther, Leibniz, Kant, Humboldt, Hegel, Nietzsche, Marx, Warburg, Freud, Benjamin, Kracauer, Weber, Simmel, Cassirer, Auerbach, Adorno, Arendt, Heidegger, and Luhmann. Indeed, current approaches as literary and artistic forms would not have been possible without the German intellectual tradition which, beginning with the Enlightenment, emphasized the role of the subject in constituting objects of knowledge and experience. This survey course will highlight important topics in German Thought, which may include the subject, consciousness and unconsciousness, Bildung and the idea of the university, the sublime and the uncanny, irony, hermeneutics and translation, the desire for knowledge, tragedy and repetition, civilization, symbolic forms and medial reproduction, memory, and authority in a historical scope. Taught in English.
Instructor(s): R. Tobias
Area: Humanities.

AS.213.270. Die Erfindung der Moderne. 3.0 Credits.
Taught in German. An introduction to key conceptions of modernity elaborated in the German-language cultural context. We consider the rise of historical awareness and the question of whether history has a purpose, modernity’s difference from ancient and medieval times, secularization and the crisis of meaning, the role of intellectual reflection and subjectivity, the relation between cultural production, political power, and economic processes. Excerpts in the original German from works by Kant, Schiller, Novalis, Hegel, Heine, Marx, Nietzsche, Weber, Benjamin, Heidegger
Prerequisites: AS.210.362 or placement exam.
Instructor(s): M. Dornbach
Area: Humanities.

AS.213.303. Mini-Term: Feminist and Queer Theory. Past and Present. 2.0 Credits.
This course familiarizes participants with central texts in contemporary feminist and queer theory. We will read, discuss and engage with selections by Judith Butler, Gayatri Spivak, Jack Halberstam, Maria Lugones and Claudia Rankine. Many of these theorists, directly or indirectly, refer to philosophic concepts such as those addressed by the German Jewish thinker Walter Benjamin. We will therefore also examine a few philosophic echoes of these contemporary feminist and queer voices in 20th century German philosophy.
Instructor(s): E. Strowick; M. Nitis
Area: Humanities.

AS.213.304. German Aesthetic Thought. 3.0 Credits.
Central to modernity is the idea that certain perceptual experiences are worth having for their own sake, even if they do not directly serve any moral, political or cognitive aims. Aesthetics emerged in the eighteenth century as a theory of such experiences, and among them especially of the beautiful and the sublime. It soon became increasingly concerned with questions regarding the significance of art as a privileged realm of human production and experience. In the German-language intellectual lineage that begins with Kant, aesthetics moved from the margins of theoretical attention to its very center, where it could engage with some of the most pressing dilemmas of modernity. We read excerpts from relevant theoretical texts (Kant, Schiller, the early Romantics, Hegel) as well as texts that perform model cases of aesthetic reflection in relation to concrete works of art (Lessing, Kierkegaard, Nietzsche, Benjamin, Adorno).
Instructor(s): M. Dornbach
Area: Humanities.

AS.213.305. Contemporary German Film. 3.0 Credits.
After almost a quarter century of neglect, German cinema is on the map again. The many awards German films have been granted over the last 15 years speak to the renaissance of German Cinema since 2000. Among these movies are Florian Henckel von Donnersmarck's The Lives of Others (Academy Award for Best Foreign Language Film, 2006), Caroline Link's Nowhere in Africa (Academy Award for Best Foreign Language Film, 2002), Fatih Akin's Head-On (Golden Bear at the Berlin International Film Festival, 2004; European Film Award 2004), Oliver Hirschbiegel's Downfall (nominated for Academy Award for Best Foreign Language Film, 2004) or Wolfang Becker's Goodbye, Lenin! (European Film Award, 2003). Nazi Germany, the Stasi, or the Reunification are prominent topics of this internationally acclaimed Contemporary German Cinema. Parallel to these mainstream productions, an aesthetically far more adventurous cinema has developed known as “Berlin School” or "Nouvelle Vague Allemande". Directors associated with the Berlin School are Christian Petzold, Angela Schanelec, Christoph Hochhäusler or Valeska Grisebach. Dissecting the everyday reality of post-wall Germany, this ‘counter-cinema’ draws on the New German Cinema of the 1970s (among others) to develop radical notions of realism and challenge narrative conventions. This course will give a survey on German Film since 2000 – discussing the historical and cultural context of selected movies as well as analyzing aesthetic strategies and concepts of realism in Contemporary German Cinema. Taught in German.
Instructor(s): E. Strowick
Area: Humanities.

AS.213.308. Schweigen in der Familie. 3.0 Credits.
We will study the psychic afterlives of involvements in WWI, National Socialism and the state security service of the GDR. In particular, we will focus on (auto-)biographical and documentary-film examinations of perpetrators in the family. Within the family, these stories are often shrouded in silence but nevertheless handed down across generations in powerful, less-than-explicit, and often distorted ways. Drawing on philosophy and psychoanalysis, we will discuss how the need for silence meets the need to hear and to talk. Recommended Course Background: AS.210.362.
Instructor(s): K. Pahl
Area: Humanities.
AS.213.310. Classic German Theater. 3.0 Credits.
Taught in German. In this seminar we will read some of the most important plays of German literature, by Lessing, Goethe, Schiller, Kleist, and Büchner. We will explore questions about the role of the theater toward the education of mankind in the spirit of the enlightenment. We will examine how tragedy is reconfigured around the context of the bourgeois family. We will study historical practices of stage production as well as modern filmic and theatrical productions. Finally, we will prepare an informal staging of a play.
Prerequisites: AS.210.361
Instructor(s): K. Pahl.

AS.213.313. Heidegger’s “Being and Time” and “Rectify”. 3.0 Credits.
This course will introduce students to Heidegger’s seminal work as seen through the lens of the TV series Rectify, which considers what it means to be “thrown” into the world and how we construct a meaningful horizon for our experiences. We will explore some of the fundamental concepts in Being and Time, including care, projection, fallenness, affect and time, and being-into-death, and consider how these same issues are taken up in Rectify, which as a TV show has to develop its own visual vocabulary to explore the structure and nature of being in the world. Taught in English
Instructor(s): R. Tobias
Area: Humanities.

AS.213.318. The Making of Modern Gender. 3.0 Credits.
Taught in English. Gender as we know it is not timeless. Today, gender roles and the assumption that there are only two genders are diligently contested and debated. With the binary gender system thus perhaps nearing its end, we might wonder if it had a beginning. In fact, the idea that there are two sexes and that they not only assume different roles in society but also exhibit different character traits, has emerged historically around 1800. Early German Romanticism played a seminal role in the making of modern gender and sexuality. For the first time, woman was considered not a lesser version of man, but a different being with a value of her own. The idea of gender complementation emerged, and this idea, in turn, put more pressure than ever on heterosexuality. In this course, we will explore the role of literature and the other arts in the making and unmaking of gender.
Instructor(s): K. Pahl
Area: Humanities.

AS.213.321. Bodies and Pleasures. 3.0 Credits.
Taught in English. This course traces a literary history of sexuality from the Middle Ages to contemporary women’s writing. We will analyze how sexual pleasure changed over time. In particular, we will discuss what role literature plays in the reproduction and transformation of bodily pleasures. The course explores how the pleasures of bodies are imagined in and through literature, but also whether words are bodies that give pleasure and perhaps even have their own pleasures. Authors discussed will include Boccaccio, Cleland, Rousseau, Schlegel, Kleist, Hoffmann, Novalis, Arnim, Büchner, Freud, Rilke, Kafka, Rich, Foucault, Kristeva, Cixous, Giddens, and Winterson.
Instructor(s): K. Pahl
Area: Humanities.

AS.213.322. Museums and Jews, Jews in Museums. 3.0 Credits.
This course will examine the presence of Jews in museums. We will consider the history of the exhibition and collection of Jewish material culture in museums from the 19th century to the present day. Our main task will be to identify the various museological traditions that engage Jewish identity, including the collection of art and antiquities, ethnographic exhibitions, history museums, and Holocaust museums. Some of the questions we will ask include: how do museums shape identity? what is the relationship between the scholarly premises of many museums and their popular reception? and, centrally, what is the relationship between Jewish museums and museums of the Holocaust?
Instructor(s): S. Spinner
Area: Humanities.

AS.213.324. What is Jewish Culture?. 3.0 Credits.
We talk about Jewish literature, music, and art—but can a book, or a song, or a painting be Jewish? We will examine the premises of this question and the many answers that have been formulated in response to it focusing on modern European (and some American) culture. Jewishness as it relates to human identity has been conceived of as related to religion, ethnicity, race, nation, language, geography, and politics. But these keywords have also been used to engage with the question of the Jewish identity not of a person, but of a cultural product. To understand the implications of calling, say, a book Jewish, we will examine the history of the concept of culture and its emergence in the context of the formation of modern Jewish identity. We will examine theoretical and literary texts originally written in German, Yiddish, Hebrew, and English, as well as painting, photography, film, and architecture from Europe, Israel and the Americas. We will aim to arrive at an understanding of the ways that the idea of culture intersects with the formation of Jewish identity in modernity. All readings will be in English.
Instructor(s): S. Spinner
Area: Humanities.
AS.213.329. Berlin Ost-Ost-West. 3.0 Credits.
Today's Berlin is a nerve center with strong impulses from Russia, Ukraine, Turkey, Vietnam, India, and other Eastern countries. Through contemporary literature and film, we will explore Berlin's role in a globalized world: how Berliners resist, embrace, or simply describe the influx of people from Eastern countries; how West-Berliners have re-oriented themselves after the fall of the wall; how the majority adapts to the minorities; and how some migrant authors rework the German language by experimenting with translational writing. By way of literary and filmic analysis, we will inquire if borders or limits can play a productive role; how the history of the divided city figures in the imaginary of immigrant authors; and how, for example, Turkish-German or Russian-German writers inscribe the tensions between East- and West-Berlin into a larger discourse on global East-West relations.
Recommended Course Background: AS.210.362
Instructor(s): K. Pahl.

AS.213.330. "What is an Image?" - Technology, Art and Visual Culture around 1900. 3.0 Credits.
Taught in English. This course is an interdisciplinary introduction to the theory of the image with an emphasis on its material and conceptual transformations in the modern period.
Instructor(s): J. Schade
Area: Humanities.

AS.213.334. Kafka. 3.0 Credits.
Franz Kafka is one of the most important — and one of the most challenging — writers of the twentieth century. This course will investigate why both are true. We will analyze a wide range of his works and learn "how" to read Kafka. We will become familiar with his characteristic subjects: law; family; power; institutions; modernity. We will also attempt to become familiar with his characteristic forms and styles and attempt, in the process, to find out what makes Kafka "kafkaesque." We will also consider his impact on art, literature, film, and thought from his time to the present. All readings in English. German majors/minors should enroll in section 02.
Instructor(s): S. Spinner
Area: Humanities.

AS.213.345. Uncanny Realism. 3.0 Credits.
Dominant in the second half of the 19th century, realism was a literary movement whose representatives devoted close attention to the quotidian particulars of a social world caught up in the transformations of modernity. Its German-language variants were often intensely local, portraying regional forms of life (in Westphalia, the Austrian and Swiss countryside, Frisia, Berlin and Brandenburg) with a richness of detail approaching that of ethnographic descriptions. Far from confining themselves to giving literal-minded inventories of observable facts, these authors portrayed social worlds haunted by intangible powers: ghosts, historical memories, and vestiges of religious experience in an increasingly secular world. We will explore this duality of local and spectral features in the works of Droste-Hülshoff, Stifter, Keller, Storm, and Fontane.
Prerequisites: AS.210.362 or equivalent
Instructor(s): M. Dornbach
Area: Humanities.

AS.213.346. Healing and Health Beyond Theology. 3.0 Credits.
Nietzsche argues in The Gay Science that to bring about a new day we need a new health—"great health," as he calls it, that enables us to surmount the sickness of our age and transcend ourselves. However much of an iconoclast Nietzsche considered himself to be, his idea of "great health" fits squarely within a theological tradition that claims that the condition for becoming a member of the ecclesia is faith, which cleanses the individual of sin and restores him to his original state. This course will examine the theological inheritance that has and continues to shape the notion of sickness and health dominant even in secular contexts, where well-being would seem to be regarded as a condition of the body rather than of the spirit. Reading to include works by Nietzsche, Kierkegaard, Augustine, Tillich, Heidegger, Scholem, Tolstoy, Büchner, Flaubert, and Kafka. Taught in English.
Instructor(s): R. Tobias
Area: Humanities
Writing Intensive.

AS.213.347. Wie wir begehren. 3.0 Credits.
Taught in German. Human desire and sexuality proves of vital concern in German-speaking countries: from the invention by German sexologists of much of the terminology still in use today to the so-called sexual revolution in the late sixties to new perspectives on the topic today. We will study film, fiction and non-fiction. Recommended Background: AS.210.362
Instructor(s): K. Pahl
Area: Humanities.
**AS.213.354. Introduction to German Poetry. 3.0 Credits.**
This class will introduce students to German poetry from the eighteenth to the twentieth century. We will read selected poems by Goethe, Eichendorff, Mörike, George, Hofmannsthal, Rilke, Trakl, Celan, and Bachmann. In addition we will read several theoretical essays by poets and literary critics alike which examine the lyric form and the curious world that poetry constructs. Readings and discussion in German.
Instructor(s): R. Tobias
Area: Humanities.

**AS.213.358. German Pop Culture. 3.0 Credits.**
Taught in German. The term "pop(ular) culture" designates cultural products and practices that are disseminated as 'mass culture.' Pop culture is accessible to many and deals with objects and materials that circulate in the everyday life of a society; it functions, one might say, as a cultural archive of the present. In contrast to high culture, pop culture enjoys an ambiguous reputation: It represents the cultural mainstream, functions as an easily consumable commodity and promotes the marketing of dominant ideologies, in the view of critical theory. However, more recent debates within cultural studies discuss pop culture as a site of social-symbolic conflicts and subversive forms of reception. Against this background, the seminar examines pop-culture phenomena in Germany after 1950, including the cult object: soccer, popular film and TV ("Tatort"), German pop music and hits (from "Hitparade" to "Rosenstolz" and beyond), recent pop literature after 1990 (Sibylle Berg, Rainald Götz, Thomas Meinecke). At the center of the analyses are questions related to the historical and political situation of pop culture, its specific aesthetic processes, and the (critique of) ideology performed by these processes.
Prerequisites: AS.210.361[C] AND AS.210.362[C]
Instructor(s): S. Spinner
Area: Humanities.

**AS.213.371. Kafka and the Kafkaesque. 3.0 Credits.**
Franz Kafka is regarded as one of the most influential writers of the 20th century. To this day, his lucid and subtle prose continues to intrigue literary critics, writers of fiction, and readers with observations that create a fictive world at once strange and familiar, hopelessly tragic and hilariously comical. The related term "kafkaesque" refers to the unique character of a literary universe that is perceived as both eerie and resistant to any classification. In this course, we will analyze texts by Franz Kafka from a variety of perspectives: as investigations into modern institutions and bureaucracy, law, punishment and family structures. Special emphasis will be given to the exploration of Kafka's poetic practice, i.e. to the material, rhetorical and performative quality of his writing. In addition to reading a selection of Kafka's prose and analyzing several film adaptations, we will also discuss some influential commentaries on his work and discuss Kafka's impact on the conceptualization of modernity. Students will gain an in-depth understanding of Kafka's oeuvre while developing skills in critical analysis and literary close reading.
Instructor(s): A. Krauss
Area: Humanities.

**AS.213.373. Sex und Macht. 3.0 Credits.**
We will discuss postwar and contemporary literature and films that grapple with the effect of unequal power structures on sexual relations. Taught in German.
Instructor(s): K. Pahl
Area: Humanities.
AS.213.374. Existentialism in Literature and Philosophy. 3.0 Credits.
This course explores the themes of existentialism, including the meaning of existence, the nature of the self, authenticity and inauthenticity, the inescapability of death, the experience of time, anxiety, freedom and responsibility to others, in literary and philosophical works. It will be examined why these philosophical ideas often seem to demand literary expression, or bear a close relation to literary works. Readings may include writings by Kierkegaard, Nietzsche, Tolstoy, Heidegger, Rilke, Kafka, Sartre, de Beauvoir, and Camus, among others. Course will be taught by the Kurrelmeyer Chair in German. Taught in English.
Instructor(s): R. Tobias
Area: Humanities.

AS.213.375. Landscapes in Crisis: Perspectives of Modern Subjectivity. 3.0 Credits.
In crisis, groups and individuals face economical, environmental, physical or political necessities creating a critical status that ultimately hints towards a loss of something valuable: health, freedom, security, wealth, ... One might say, in a crisis, the outlook is grim. This seminar will focus on the one who is looking – the subject that produces the outlook and that we consider a critical thinker. The critical thinker is a rather new phenomenon, it is strongly tied to a freedom of thought that allegedly allows us to paint and frame our own worldview. We will work with the emergence and variations of landscape from 14th century painting to late 20th century film, with an emphasis on historical turning points such as the French Revolution, the two world wars and the fall of the ‘iron curtain’ that led to today’s world order. Writers, directors and painters will include, among others: Peter Brueghel the Older, Jean Jacques Rousseau, Edgar Allan Poe, John Dos Passos, Peter Weiss, Michel Foucault, Werner Herzog, Wim Wenders. All media and discussions in English.
Instructor(s): M. Heim
Area: Humanities.

AS.213.376. Art in Literature. 3.0 Credits.
Discussion in German. Since the Enlightenment, works of art have played a prominent role in literary texts, providing an occasion for texts to reflect on their status as art and to explore the possibilities and challenges unique to aesthetics. In this course we will examine novelas and poems that refer to paintings or other works of art to illuminate the nature of art and to reflect on phenomena that have no place in any other discourse. Readings to include works by Lessing, Eichendorff, Storm, Mörike, Adrian, Freud, and Hofmannsthal.
Prerequisites: AS.210.361 AND AS.210.362
Instructor(s): R. Tobias
Area: Humanities.

AS.213.377. Jewish Modernity and Minority Literature. 3.0 Credits.
This course will focus on Jewish modernity and the production of Jewish minority literature in Berlin between the two World Wars, a period of intense artistic and intellectual vitality, Berlin was an international center for theater, visual arts, and literature. Many important Yiddish-language writers were drawn to Berlin and, together with their German-language counterparts, produced a body of literature that explores issues of modernity and identity. By comparing works in Yiddish and German, we will learn about inter-War Berlin’s cultural diversity and richness, while also gaining insight into the particular issues of writing about Jewish identity in the 1920s, and the implications of writing in a minor language (Yiddish). We will read works by authors including Joseph Roth and Alfred Döblin in German, and Moyalsh Kulbak and David Bergelson in Yiddish. All texts will be in translation.
Instructor(s): S. Spinner
Area: Humanities.

AS.213.383. Jewish Travel Literature. 3.0 Credits.
Exile; Diaspora; Wandering; Refugee; Immigrant—these are all keywords that have been closely associated with Jews and the Jewish experience. What binds them all is movement, whether individual or communal, voluntary or involuntary. This course will examine the connection between movement and Jewish culture and history through the various forms of Jewish travel writing. In looking at depictions of travel both fictional and historical from the Middle Ages to the 20th century we will revisit and interrogate many of these keywords to understand the ways they have been deployed to understand Jewish identity in literature and beyond. A central point of consideration will be the role of travel in shaping conceptions of Jewish identity as well as Jewish literature in the modern period. We will examine novels, short stories, reportage, and travelogues describing real and imagined journeys from and to Asia, the Middle East, Europe, and America. All readings will be in English translation, primarily from sources in Yiddish, Hebrew, and German.
Instructor(s): S. Spinner
Area: Humanities.

AS.213.387. Major City, Minor Literature? Berlin in German-Jewish and Yiddish Literature. 3.0 Credits.
Between the two World Wars, a period of intense artistic and intellectual vitality, Berlin was an international center for theater, visual arts, and literature. Many important Yiddish-language writers were drawn to Berlin and, together with their German-language counterparts, produced a body of literature that explores issues of modernity and identity. By comparing works in Yiddish and German, we will learn about inter-War Berlin’s cultural diversity and richness, while also gaining insight into the particular issues of writing about Jewish identity in the 1920s, and the implications of writing in a minor language (Yiddish). We will read works by authors including Joseph Roth and Alfred Döblin in German, and Moyshe Kulbak and David Bergelson in Yiddish. All texts will be in translation.
Some questions we will explore include: • What is a minority/minor language or literature? • How did German and Yiddish interact in cultural and social spheres? • Can texts in different languages comprise a single body of literature? • What did it mean to be German and what did it mean to be Jewish? • Are assimilation and hybridity useful concepts? • Is there such a thing as Jewish modernism? • How did literature of the period respond to the rise of the Nazi party and the intensification of antisemitism?
Instructor(s): S. Spinner
Area: Humanities.
AS.213.407. Museums and Identity. 3.0 Credits.
This course will explore the phenomenon of the “identity” museum through case studies involving Jewish and Holocaust museums around the world. The museum boom of the last half-century has centered in large part around museums dedicated to the culture and history of particular minority groups; recent notable (and relatively local) examples include the brand new National Museum of African American History and Culture in Washington and the National Museum of American Jewish History in Philadelphia. Our understanding of the contemporary theory and practice of such museums will be based on an examination of the history of the various museological traditions that engage Jewish identity from the 19th century to the present, including the collection and display of art and antiquities, ethnographic exhibitions, history museums, and Holocaust museums. We will deal with two primary museological phenomena: first, the introduction of the “primitive other” into European modernity via ethnographic museums; second, the museological commemoration and representation of trauma, specifically of the Holocaust. We will explore these topics through historical documents, theoretical readings, and case studies including visits to nearby museums. All readings in English.
Instructor(s): S. Spinner
Area: Humanities.

AS.213.433. Fictional Autobiographies and Autobiographical Fiction. 3.0 Credits.
This course will examine fictional works that pose as memoirs or autobiographies, which is not a genre unique to the twentieth century but which rose to prominence in the modern period as a result of historical developments. We will consider the aesthetic presuppositions that gave rise to the novel and culminated in the great realist narratives of the nineteenth century that claimed to do nothing less than represent real life situations. Novels such as Robert Walser’s Jakob von Gunten, Thomas Mann’s Felix Krull, Bernhard’s Auslöschung, Beckett’s Malone Dies, and Coetzee’s Waiting for the Barbarians call these assumptions into question by focusing on the inner life of a hero who lives only in writing and writes to live. Fictional autobiographies provide a fertile ground for reconsidering such issues as what it means to tell a story and whether life takes the form of a story, which have gone unaddressed in narrative theory.
Instructor(s): R. Tobias
Area: Humanities.

AS.213.501. Independent Study - Literature. 0.0 - 3.0 Credits.
Instructor(s): Staff
Writing Intensive.

AS.213.502. German Independent Study - Literature. 0.0 - 3.0 Credits.
Instructor(s): E. Strowick; M. Caplan; R. Tobias.

AS.213.509. German Honors Program. 3.0 Credits.
Instructor(s): E. Strowick; K. Pahl; R. Tobias.

AS.213.510. German Honors Program. 0.0 - 3.0 Credits.
Instructor(s): A. Krauss; E. Strowick; K. Pahl; R. Tobias.

AS.213.613. Hermeneutics around 1800 (from Hamann to Büchner).
With Schleiermacher, hermeneutics defined itself as a universal theory of understanding which no longer focuses only on biblical and juridical exegeses but on linguistic utterances in general. It thus became the matrix for subsequent Geisteswissenschaften and paved the way for various critical approaches which even today remain highly influential. The course examines the genesis of modern hermeneutics through the lens of its philological and philosophical precursors, contemporary commentators and literary authors. Key issues will be the underlying concepts of textuality and language, historicity and the subject. Authors include: Chladenius, Meier, Hamann, Herder, Kant, Schlegel, Schleiermacher, Goethe, Rahel Levin Varnhagen, Jean Paul, Büchner.
Instructor(s): A. Krauss
Area: Humanities
Writing Intensive.

AS.213.616. The Aesthetic Discourse of Modernity.
When, in 1985, Jürgen Habermas published his lectures on The Aesthetic Discourse of Modernity, he pursued a double aim. He offered a critique of French Theory while at the same time providing a foundation for a normative category of modernity in the tradition of Hegel. Curiously there is one subject he does not touch on, though it seems necessary for a sufficient understanding of modernity: the realm of art and literature. This course will develop a critique of Habermas’ normative notion of modernity through re-readings of texts by Nietzsche, Benjamin, Horkheimer/Adorno, Bataille, Derrida, Bataille and Foucault to elaborate an alternative category of aesthetic modernity. Taught in English. Reading knowledge of German and French is not required, but recommended.
Instructor(s): A. Geisenhanslueke
Area: Humanities.

The seminar will investigate when and in which ways theatrical space was interpreted as a shelter for the fleeing. Starting with Greek tragedy and ending with Elfriede Jelinek’s postdramatrical text “Die Schutzflehenenden” we will discuss the relations between the institutions of theater and drama and political concepts of Asylum from a historical perspective. We will proceed on the basis of the idea that the stage offers temporary protection where refugees stop their journey, argue their case and expect a decision. Reading Aeschylos, Euripides, Goethe, Brecht and Jelinek, we will analyze different theatrical set ups and procedures in which the precarious state of the fleeing is and has been negotiated on stage. We will also deal with recent theater projects which open the stage to refugees und give them a platform outside Immigration offices. Reading Benjamin and Florens Christian Rang we will also discuss how the relationship of Asylum and theater is reflected in modern theory of tragedy.
Instructor(s): E. Vogel
Area: Humanities.

AS.213.635. Anthropology and Modernism.
This course will examine the reciprocal relationship between modernism and anthropology in Western and Central Europe, including examples from French, German, and Yiddish contexts. We will focus on the presence of anthropological and ethnographic discourses within various registers of modernist thought, literature, and visual culture, with special attention to visual and literary primitivism. We will also consider attempts by ethnographers to shape their practice in a modernist mold. Our central concerns will include the attempt to create a modernist poetics grounded in ethnography and the relationship between anthropological theory and ethnographic praxis in the modernist understanding of “culture.”
Instructor(s): S. Spinner
Area: Humanities.
AS.213.636. Hölderlin and His Readers.
Hölderlin’s works develop vast intellectual constructions in a poetic language of striking rhetorical power, while remaining anxiously concerned with the conditions of lyric utterance. Although his work responded to the literary and philosophically currents as well as the revolutionary politics and Philhellenism of his time, it proved untimely. Yet the same severe features that alienated contemporaries would lead such 20th-century poets as George, Rilke, and Celan to celebrate and emulate Hölderlin. We will examine how Hölderlin’s early contributions to post-Kantian idealism paved the way for his poetic project, as well as his odes and elegies, and some of the poetological writings. The late hymns will be discussed in detail against the backdrop of Hölderlin’s engagement with ancient tragedy and his Empedocles project. Since Hölderlin’s works have elicited literary criticism of the highest order as well as influential reflections on the aims and challenges of literary interpretation, our readings of Hölderlin will proceed in dialogue with such critical responses.
Instructor(s): M. Dornbach
Area: Humanities
Writing Intensive.

AS.213.650. Poetic Thought.
This course will examine essays and poems by Goethe, Hölderlin, and Rilke with an eye toward the ways in which their work addresses issues central to German Idealism and modern German thought. These include the relation of subject to object; the problem of the representation of the whole; the reconciliation of science and art; and the role of consciousness in the construction of the world. Readings to include texts by Goethe, Hölderlin, and Rilke with commentary by Heidegger, Gadamer, Henrich, Husserl, Benjamin, Szondi, and Allemann.
Instructor(s): E. Forster; R. Tobias
Area: Humanities.

AS.213.656. Thinking of the Environment.
Few concepts are more anthropocentric than the environment. Although the term is usually invoked to describe what is other than the human being, it places the human at the center of the universe by defining nature as the world surrounding him. This course will examine several literary and philosophical texts from Novalis to Celan that approach nature as a sphere alien to thought, which can never be known except through the rhetorical device of prosopopoeia, which gives face to what is inhuman.
Readings to include works by Novalis, Schlegel, Tieck, Stifter, Rilke, and Celan.
Instructor(s): R. Tobias
Area: Humanities.

AS.213.664. Dirt.
Near the outset of Bühchner’s “Lenz,” the protagonist seeks to impress himself into the earth, “[E]r dehnte sich aus und lag über der Erde, er wühlte sich in das All hinein, es war eine Lust, die ihm wehe tat.” This course will examine the desire to merge with the surface of the earth and to become a planetary body, at once utterly material and utterly ethereal. The earth’s crust will emerge as the interface between cosmic forces and human existence, the atmosphere and the pedosphere. We will consider how history, biography, and geological time intersect in dirt, or what William Bryant Logan has recently called the “ecstatic skin of the earth,” in texts by Goethe, Alexander von Humboldt, Novalis, Nietzsche, Büchner, Walser, Rilke, Kafka, and Sebald.
Instructor(s): R. Tobias
Area: Humanities.

AS.213.666. “To be continued” - Seriality in Literature and Other Media.
Taught in German. By ending with the words “(To be continued)” [(Ist fortzusetzen)], Goethe’s Wilhelm Meisters Wanderjahre not only reflects on the open form of the modern novel but also points toward serialized formats of fiction as they emerge in the 19th century due to advances in printing technologies. The publication of fiction in periodical installments in magazines or newspapers brings about the development of new genres (serialized novel/Feuilletonroman) along with specific serial narrative techniques. The cliffhanger e.g. – although invented earlier – becomes a prominent technique to create suspense. The course analyzes seriality with respect to narrative forms and genres across various media (literature, theater, film, TV) from the 19th century to the present. It further discusses serial aesthetics, seriality in structuralist and poststructuralist theory as well as the ambivalent status of seriality in the arts between avantgarde and popular culture. The course material will include: Stifter, Fontane, excerpts from the magazine “Die Gartenlaube”, Wagner, Freud, Kafka, Lévi-Strauss, Deleuze, Eco, Isra, “The Perils of Pauline” (serial, 1914), “Copycat” (Jon Amiel, 1995), “Twin Peaks” and current US-American TV series.
Instructor(s): E. Strowick
Area: Humanities
Writing Intensive.

AS.213.668. Kleist.
This seminar will explore the narrative, dramatic, theoretical and quasi-journalistic work of Heinrich von Kleist along two lines of inquiry. We will read his literary experiments as reactions to the major shift in the sex-gender system and the new deployment of sexuality in the eighteenth century. We will discuss his unique role in the production, communication and interpretation of feeling across narrative and theater.
Instructor(s): K. Pahl.

AS.213.670. Theories of the Human in German Modernity.
Fifty years ago Michel Foucault advanced the influential argument that modern thought foundered on the circular undertaking to ground the possibility of human knowledge in actual knowledge of the human being. We survey various conceptions of the human developed in German modernity with a view to Foucault’s diagnosis. Against the background of de-modern and early modern conceptions of the human, we focus on the tradition of anthropological thinking inaugurated by Herder, including spin-offs of German idealism in the writings of the later Schelling, Schopenhauer, and Marx. We consider the rivalry between twentieth-century philosophical anthropology (Plessner) and Heideggerian ontological anthropology, Hans Jonas’ phenomenology of the human, as well as recent disputes regarding the significance of the human standpoint.
Instructor(s): M. Dornbach
Area: Humanities.

AS.213.677. Impossible Intimacy.
Reading Ingeborg Bachmann and Elfriede Jelinek, we will analyze the condition of heterosexuality after fascism. “Fascism lies at the root of the relationship between a man and a woman,” Bachmann argues. And Jelinek continues to uncover structures of sexism, sadism and submission in the German language.
Instructor(s): K. Pahl
Area: Humanities
Writing Intensive.
AS.213.685. Theories of Translation (1530/1930).
Taught in German. It is one of the topoi of literary studies that translation presupposes interpretation and is thus bound to certain discursive premises. To investigate specifically how this connection between translation and interpretation has developed historically and is embedded in concerns of philosophy of language, the seminar reconstructs concepts (politics) of translation from Luther to Benjamin and Buber-Rosenzweig. One of the focal points is the emergence of a modern theory of representation between 1730 and 1820 (Gottsched, Venzky, Hamann, Herder, Schleiermacher), the effects of which are staged with the aid of different Shakespeare translations (Wieland, Lenz, Schlegel). Finally, by including more recent theories of translation from the milieu of deconstruction/post-structuralism, the seminar seeks to reconsider interpretation from the standpoint of translation, and translation from that of interpretation.
Instructor(s): A. Krauss
Area: Humanities
Writing Intensive.

AS.213.689. Creativity.
Modernity requires creativity of the artist. But what does this mean? Creativity has been thought of as a gift, but also as a technique or an attitude that can be developed. It thus moves between the mysterious, the mechanical, and the relational. While creativity was of little importance for the normative poetics (Regelpoetik) of the Baroque, the Enlightenment demanded an emancipation from external rules, which led to the apotheosis of human creativity in the idea of the genius. Countering overly idealistic notions of autonomy and human artistic agency, other cultivated practices that acknowledge and even amplify the role of chance. This seminar will focus on the eighteenth and early nineteenth centuries and invite contributions on more recent poetics from its participants. Particular emphasis will be placed on interrogating the roles of the imagination, phantasy, and visualization in the creative process.
Instructor(s): K. Pahl
Area: Humanities

AS.213.701. The Frankfurt School.
Founded in the interwar years, the Frankfurt School gave rise to an array of reflections on modernity, emancipation, and ideology that have continued to inform critical theory and are now eliciting renewed interest. In this seminar we focus on various models developed by Frankfurt School theorists for approaching cultural phenomena. Following a brief review of Hegelian and Marxian legacies at work in the Frankfurt School, we consider relevant works by Walter Benjamin, Siegfried Kracauer, Max Horkheimer, and Theodor W. Adorno.
Instructor(s): M. Dornbach.
Area: Humanities.

AS.213.705. Hegel's Phenomenology of Spirit.
We will study key passages of The Phenomenology of Spirit from a queer-feminist perspective and engage with some of the feminist scholarship on Hegel
Instructor(s): K. Pahl
Area: Humanities.

AS.213.706. Literature, Museums, Mimesis.
Can museums be literary? Can literature be museal? Throughout the twentieth century and into the present, the museum has repeatedly challenged models of representation, none more so than mimesis, both as aesthetic theory and representational practice. This has been a role played by museums, both in their traditional guises as repositories of objects and — as André Malraux presciently had it — as “imaginary museums.” This course will examine the larger disruption of mimesis, and more specifically literary realism, through the particular catalyzing effects of museums. We will deal with two primary museological phenomena: first, the introduction of the “primitive other” into European modernity via ethnographic museums; second, the museological commemoration and representation of trauma, specifically of the Holocaust. Special attention will be paid to discursive, formal, and rhetorical locations of overlap between the museal and the literary, including ekphrasis, linearity, volume, and collection. Readings will include fiction, poetry, and theoretical texts, as well as secondary sources examining particular museums and exhibitions. All texts in English.
Instructor(s): S. Spinner
Area: Humanities
Writing Intensive.

Taught in German. Categories such as the uncanny, motion, or seriality are not easily associates with German Realism. The course takes a fresh look at texts by Theodor Fontane, Adalbert Stifter, and Theodor Storm in order to explore the thesis of the modernity of Realism. We will analyze framing techniques, temporal structures (e.g. boredom or belatedness) as well as the interrelation between realist poetics and other discourses and media by which realist texts produce reality as perceived reality. The aesthetics and epistemology of Realism will further be discussed with respect to Erich Auerbach’s “Mimesis” and Roland Barthes’ “reality effect.”
Instructor(s): E. Strowick
Area: Humanities.

This course takes as its point of departure Klopstock’s efforts to model German poetry after music—“the harmony of the spheres”—which served as the impetus for Goethe’s and Schiller’s poetry and Hölderlin’s late hymns. We will examine his experiments with verse form and his notion of interiority as the backdrop for Herder’s theory of the Volkslied as a popular genre that joins word and music and expresses the soul of a nation. Music and poetry will emerge on the one hand as the glue that binds a community and on the other as a disruptive force that isolates its members. Its significance as a figure if not vehicle for transcendence will return again and again in works as varied as Achim von Arnim and Brentano’s Des Knaben Wunderhorn, Kleist’s “Heilige Cäcilie,” Hölderlin’s poetological writings, Schopenhauer’s Die Welt als Wille und Vorstellung, and Nietzsche’s Geburt der Tragödie among other texts.
Instructor(s): M. Dornbach; R. Tobias
Area: Humanities.
**AS.213.741. Literature, Psychoanalysis, and Unassimilable Experience.**
This course will consider experiences at the juncture between memory and forgetting, history and oblivion, narration and music. Such liminal experiences are frequently interpreted in psychoanalytic theory as trauma, though there is no reason that a purely negative definition should prevail. The suspension of the self and the concomitant immersion in the sensible world could just as well be regarded as an ecstatic experience. This course will examine the notions of immediacy, singularity, power, and sensuality in psychoanalytic theory (Freud, Lacan, Klein, Malabou) and beyond. Kleist’s “Die heilige Cäcilie” and Kafka’s “Josefine, die Sängerin” will serve as touchstones for our exploration of the ecstasy that literature at once produces and reproduces as a verbal representation and musical medium.
Instructor(s): K. Pahl; R. Tobias
Area: Humanities.

**AS.213.749. Modern Subjectivities: Legal, Economic, Political.**
The course explores some aspects of the contradictory constitution of the modern subject as a subject that is split, opposed, in tension. Two archetypal figures of this split are the "bourgeois," as the social-economic subject, and the "citoyen" or "citizen," as the political subject. The bourgeois and the citizen are defined by distinct and opposing conceptions of the "will" of education (Bildung), and of the relation between law and nature, normativity and facticity. In asking how to understand the conflictual relationship between these two basic figures of the modern subject, the course will focus especially on the paradoxes of "individual rights" (subjektive Rechte) as the fundamental mechanism of modern subject-formation. How do rights both empower subjects, while also contributing to forms of their disempowerment? To what extent do rights contain and organize the tensions between subjects understood as social or economic, and as political? CLASS BEGINS FEBRUARY 25 AND ENDS APRIL 1. Readings will include excerpts from (among others): Hegel, Marx, Nietzsche, Horkheimer and Adorno, Heidegger, Foucault, Balibar and Rancière.
Instructor(s): C. Menke; R. Tobias
Area: Humanities.

**AS.213.755. Philosophy of/and the Novel.**
The novel is unique among literary genres in its capacity to represent the inner life of characters portrayed in the third person. Neither poetry nor drama is equipped to convey the innermost thoughts of characters who do not speak for themselves but are instead narrated. This course will examine the implications of "third-person subjectivity" for the novel's claim to construct (or reconstruct) a world governed by ethical norms that are all but impossible to fulfill. In fact, the very impetus for the novel is the unresolvable tension between the ideals that a work posits and the choices its characters face in a world defined by compromise and limitation. What criteria for judgment does the novel provide? How does it establish a world it simultaneously critiques as devoid of meaning save the meaning posited by the subject? We will also investigate the use of novels and novelistic form in philosophy. Is it possible for novels to be treated not only as vehicles, but also as equivalents to philosophical views? How do novelistic forms provide new ways of thinking or philosophizing? Readings to include works by Lukács, Bakhtin, Hamburger, Sartrre, Beauvoir, Ricoeur, Murdoch, Nussbaum, Diamond and novels by Coetzee and Flaubert.
Instructor(s): R. Tobias; Y. Ong
Area: Humanities.

**AS.213.757. Rilke.**
The concept of the "Weltinnenraum" has long dominated Rilke scholarship as a result of its two-fold sense as both the Innenraum der Welt and the Weltraum des Inneren. In this it captures the seeming autonomy of the world of things, characteristic of the New Poems, as well as the exploration of the cosmic dimensions the self, characteristic of the late work. This course will concentrate on the Duino Elegies and Sonnets to Orpheus with emphasis on the transformation of both world (or nature) and consciousness into song. In addition to Rilke's poetry, we will also read texts by Husserl, Heidegger, and Merleau-Ponty. Taught in English.
Instructor(s): R. Tobias
Area: Humanities.

**AS.213.761. Literary Aesthetics.**
This course explores literature in the context of the aesthetic tradition in philosophy. Themes include literature as mimesis, or the representation of reality, its relation to truth, untruth, and possibility, literature as the revealing of being, literary imagination, the distinctiveness of literary language and expression, the role of the literary author. Readings may include background selections from Plato and Aristotle, but the course will focus on philosophical interest in literature since the late 18th century, and may include Kant, Hölderlin, Nietzsche, Heidegger, Sartrre, Blanchot, Bachelard, among other readings. Course will be taught by the Kurrelmeyer Chair in German. Taught in English.
Instructor(s): Staff
Area: Humanities.

**AS.213.792. GRLL SEMINAR/Fellini - Almodóvar.**
In this co-taught graduate seminar, Professors Eduardo González and Bernadette Wegenstein will be discussing these two seminal European directors in their cultural and historical context and with an eye to both their radical eccentricity and utter centrality to cinema today (e.g., The Great Beauty). Our discussions will start with questions that are intrinsic to film theory such as mimicry, travesty, the visual and narrative construction of the erotic, as well as questions pertaining to the degree of realism in these directors' work, i.e., the "road beyond neorealism" for Fellini, and Almodóvar's queerness as expressed in his "true-and-false testimonies." We will then proceed to read and watch some historical documents around the constructions of some of these directors' films, such as Petronius' Satyricon, about the worshipping of the most important female deity in late antiquity, Isis, in light of Fellini's Satyricon; and Thierry Jonquet's novel Tarantula and the French-Italian horror film, Eyes Without a Face (1960), which were both the basis for Almodóvar's film Satyricon, written in the persona of a female prostitute. The class will also include several guest speakers TBA.
Instructor(s): B. Wegenstein; E. Gonzalez
Area: Humanities.

**AS.213.800. Independent Study-German.**
Instructor(s): Staff.

**AS.213.811. Advanced Reading in German Literature.**
Students will read works in German from a variety of authors. Sessions with faculty will be arranged on an individual basis, as needed.
Instructor(s): K. Pahl; R. Tobias
Area: Humanities.

**AS.213.812. Directed Dissertation Research.**
Instructor(s): Staff.

**AS.213.813. German Qualifying Paper Preparation.**
Instructor(s): Staff.
AS.214.125. Freshman Seminar: Dangerous Liaisons: Words and Music Through the Ages. 3.0 Credits.

How do music and words interact? Do words have a priority on music or vice versa? Does music need words to be understood and interpreted? Are words filled with meaning by music? A variety of readings and musical examples will be discussed, including genres as diverse as medieval songs, madrigals, Romantic Lieder, opera, the American musical, and contemporary pop music. The seminar will include field trips to the Baltimore Museum of Art, the Meyerhoff Symphony Hall, the Peabody Institute, and the Evergreen Museum and Library. Students will also have the opportunity to attend a live HD broadcast of Mozart’s Don Giovanni from the Metropolitan Opera. No musical skills required; strong doses of curiosity most welcome.

Instructor(s): E. Refini
Area: Humanities

AS.214.171. Freshman Seminar: Witchcraft and Demonology in Renaissance Europe. 3.0 Credits.

Who were the witches? Why were they persecuted for hundreds of years? Why were women identified as the witches par excellence? How many witches were put to death? (Answer: 30-40,000, between about 1400 and 1800.) What traits did European witchcraft share with witch-mythologies in other societies? After the witch-hunts ended, how did “The Witch” go from being “monstrous” to being “admirable” and even “sexy”? What are the relations between witchcraft and witch-persecution between 1400 and 1800. The second half of the course will concentrate on artistic representations of witches in media ranging from manuscripts to movies, concentrating on Italy, France, Spain, and Germany.

Instructor(s): W. Stephens
Area: Humanities
Writing Intensive

AS.214.176. Freshman Seminar: Warrior Women from Ancient Times to Game of Thrones. 3.0 Credits.

Dean’s Teaching Fellowship This course will trace the origins of the warrior woman from ancient times through today’s pop culture and reflect on the multiplicity of its social, cultural, and political ramifications.

Instructor(s): J. Gomez
Area: Humanities

AS.214.261. The World of Dante. 3.0 Credits.

An Introduction to the Divine Comedy
Instructor(s): P. Forni
Area: Humanities
Writing Intensive

AS.214.278. Italian Film. 3.0 Credits.

This undergraduate seminar is an overview of 100 years of Italian film history covering such pivotal moments as the early Futurist films, the creation of Cinecittà, the Italian Neorealist film movement, the legendary Commedia all’italiana films, as well as a discussion of classic Italian auteurs such as Fellini, Pasolini, Wertmüller, Bertolucci, and such contemporaries as Garrone and Sorrentino.

Instructor(s): B. Wegenstein
Area: Humanities

AS.214.301. Survey of Italian Literature. 3.0 Credits.

Un viaggio dal Rinascimento alla modernità, per incontrare il genio italiano e conoscere la nostra umanità. Through readings from the most celebrated texts by Italian authors, we will travel from the early renaissance to the 20th century to encounter the struggles and triumphs of the human conscience, and the highest achievements of Italian culture. The course will explore poetry, short story, theatre, epic, and novel, with an introduction to Italian opera. Students will have the opportunity to read Dante Alighieri, Baldassarre Castiglione, Galileo Galilei, Giacomo Leopardi, Giorgio Bassani, and many others in original language, and to discover how these works are relevant in our own life and times. Taught in Italian. Recommended course background: Italian AS.210.252; may be taken concurrently with Advanced Italian II.

Prerequisites: Not open to students who have taken AS.214.302.
Area: Humanities
Writing Intensive

AS.214.302. The Agony and the Ecstasy from Dante to the Romantics. 3.0 Credits.

By exploring texts and topics in Italian literature and culture from the Middle Ages to modernity, this course will address the themes of suffering and triumph as they are expressed through several great authors, many of whom were fundamental to the development of the Western European tradition. These authors will include Dante, Petrarch, Boccaccio, Machiavelli, Ariosto, Tasso, Foscolo, Leopardi, and Manzoni. The course will also explore the relationship between these works and other forms of culture, such as painting and music. The course is taught in English with special sessions in Italian for Italian majors and minors, so as to count towards the Italian Major/Minor requirements.

Prerequisites: Not open to students who have taken AS.214.301.
Area: Humanities
Writing Intensive

AS.214.321. The Prince and the Demagogue: Machiavelli to House of Cards. 3.0 Credits.

Niccolò Machiavelli’s The Prince is undoubtedly one of the most influential political works in the history of western culture. Read and discussed in many ways, the early-sixteenth-century booklet has been the object of controversial interpretations, which have fueled its myth. Who is Machiavelli’s prince? Is he a tyrant, a good ruler, or a demagogue? How does Machiavelli’s prince move between ethics, politics, and rhetoric? Often evoked in contemporary political discourse and popular culture, Machiavelli’s prince embodies a flexible idea of power that is most difficult to pin down. Moving from a close reading of the text within its original context, this course will consider not only the classical sources that inform The Prince, but also the presence of Machiavelli in today’s political culture and fiction. Special attention will be given to the contribution of Italian philosopher Antonio Gramsci, whose interpretation of Machiavelli’s thought is one of gateways to the reception of The Prince in the 20th and 21st centuries. The course is taught in English. Italian Majors and Minors should register for section 02.

Instructor(s): E. Refini
Area: Humanities
Writing Intensive
AS.214.324. Futurism and the birth of Avant-garde. 3.0 Credits.
The course will explore Futurism, the first great avant-garde movement in modern European history, and its vast and mostly unknown literary production. We will analyze Futurism in its social, literary, and historical background, as well as in its artistic contributions to Italian and European culture. We will focus on Filippo Tommaso Marinetti (1876-1944), founder of the movement and cornerstone of all its diverse souls and manifestations, and analyzing his manifestos, poetry, novels, tales and plays, we will shed light on the peculiarity of a movement that acted as the initial spark, and has given shape to the following literary and artistic avant-gardes of the XX Century. The final project for the course can be either a paper or a translation project. Reading knowledge of Italian is suggested.
Instructor(s): L. Bacchini
Area: Humanities.

AS.214.333. Shakespeare on the Opera Stage. 3.0 Credits.
From Rossini's Otello to Cole Porter's Kiss me Kate, from Verdi's Macbeth to Leonard Bernstein's West Side Story, the works of William Shakespeare have been an extraordinary source of inspiration for musical theatre. By exploring operatic adaptations of Shakespeare in different periods and contexts, this course will examine the ways in which composers and librettists have interpreted and reshaped the plays. The course, primarily focused on the 19th century Italian reception of Shakespeare and, in particular, on operas by Rossini and Verdi, will also consider the phenomenon within a broad transnational perspective up to include contemporary opera and musical.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

This course investigates how ecological factors inspired storytellers, influenced modes of literary publication, and determined reader responses in Europe before 1700. Students enrolling in section 2 will attend a supplementary one hour session at a time to be mutually decided and complete the work in Italian.
Instructor(s): T. Tower
Area: Humanities
Writing Intensive.

AS.214.347. Petrarch and the Beginnings of the Renaissance. 3.0 Credits.
This course will focus on the life, work, and thought of Francesco Petrarca, or "Petrarch." Though known today primarily as the author of Italian love poetry, Petrarch considered his Latin work more lasting. We will explore both sides of his work, the vernacular and Latin (in English translation) to come to an understanding of his place in medieval intellectual history, the history of philosophy, and the history of literature.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

Our online shopping habits and political Facebook posts are being monitored by Google's administration as well as by governments across the globe. If we think this is harmless, it is because we assume that the era of the first Apple Watch is different from the era of the first Gutenberg press. But is this really the case? In this course, we will explore this issue by focusing on the emergence of the first institutionalized censorship during a foundational period of modern times - the Renaissance. After addressing the reasons that motivated the creation of the first Index of Prohibited Books (1559), we will closely examine some of the most controversial works by Renaissance authors who were persecuted and banned for their religious, political, or scientific ideas (Erasmus of Rotterdam, Niccolò Machiavelli, Torquato Tasso, Galileo Galilei). The analysis of these texts will allow us to gain an understanding of both the dynamics of censorship and self-censorship in the Renaissance, and the logic behind power's obsession with cultural control - in those times like nowadays.
Instructor(s): A. Zuliani
Area: Humanities
Writing Intensive.

AS.214.362. Italian Journeys: Medieval and Early Modern. 3.0 Credits.
Italy's history as a unified country is fairly recent, but the very idea of "Italy" is a very old one. Indeed, many "Italies" have existed throughout the centuries, thus contributing - not without conflicts - to one of the richest cultures in the world. By exploring texts and topics from the Middle Ages to modernity, this course will address the cultural history and geography of Italy, focusing on both its centers (Rome, Florence, Venice, etc.) and its peripheries. A veritable journey through Italy, the course will address authors that were fundamental to the development of the Western European tradition (e.g. Dante, Petrarch, Boccaccio, Machiavelli, Ariosto, Tasso). The course will also explore the relationship between these works and other forms of culture, such as painting, music, cinema. The course is taught in English with section 02 available for Italian for Italian Majors and Minors so that the course will count towards their requirements.
Area: Humanities
Writing Intensive.

AS.214.363. Italian Journeys: Modern and Contemporary Green Literature. 3.0 Credits.
This course studies 20th and 21st century Italian literature from an ecological perspective. Focusing on the position of humans and non-humans in both natural and urban environments, and reflecting on how literature can raise environmental consciousness and change perceptions of the earth, we shall read classics and lesser-known literature from a variety of genres like poetry by Salvatore Quasimodo, Pier Paolo Pasolini, and Andrea Zanzotto, novels by Carlo Levi, Carlo Cassola, and Anna Maria Ortese, as well as children's books by Dino Buzzati and Italo Calvino. This course is taught in English. Special sessions in Italian will be announced during the semester. Italian majors and minors should enroll in section 02.
Instructor(s): L. Di Bianco
Area: Humanities
Writing Intensive.
AS.214.374. Being Italian: Autobiography and Identity in Literature and Media. 3.0 Credits.
What does it mean to be Italian rather than French, American, or anything else? What’s the difference between being Tuscan, Milanese, or Sicilian? Between being Christian, Jewish, Muslim, or “other”? How does the reality of Being Italian differ from the clichés that prejudice, commercialism, or mass media fads help to spread? Considering these questions can be important whether you want to use your Italian in business, in academia, or for sheer pleasure, whether you want to watch films, read books, or see the sights.
Prerequisites: AS.210.251 AND AS.210.252
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.376. Warrior Women from Ancient Times to Game of Thrones. 3.0 Credits.
This course will trace the origins of the warrior woman from ancient times through today’s pop culture and reflect on the multiplicity of its social, cultural, and political ramifications.
Instructor(s): J. Gomez
Area: Humanities.

AS.214.377. Gendered Voices. 3.0 Credits.
The course will explore the notion of ‘voice’ in order to show how poetry, literature, philosophy, and music have been dealing with it throughout the ages. In particular, by focusing on classical figures as such as the Sirens, Circe and Echo, as well as by considering the seminal discussions of the ‘voice’ in Plato and Aristotle, the course will address the gendered nature of the voice as a tool to seduce and manipulate the human mind. More specifically, the course will discuss the ways in which male and female voices embody different functions. Examples to be analyzed include texts by Dante, Petrarch, Ariosto, and Tasso. The course will also consider later rewritings of myths concerned with the voice such as Giuseppe Tomasi di Lampedusa’s The Siren and Italo Calvino’s A King Listens.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.390. Machiavelli: A Renaissance Master. 3.0 Credits.
Who was Niccolò Machiavelli? The author of the Italian Renaissance’s most famous book, The Prince, he also wrote histories, commentaries, comedies, and letters. And he had a career as a prominent Florentine diplomat, which ended tragically but informed everything he wrote. This course is intended to offer students an introduction to Machiavelli’s major works and to the intellectual, social, and political contexts that shaped his thinking.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.393. Italian Opera and the Art of Adaptation. 3.0 Credits.
Italian opera, from its very inception, has developed in close dialogue with other art forms. The pioneering operas of Peri and Monteverdi based on the figure of Orpheus are part of a larger cultural movement that saw Renaissance philosophers (Marsilio Ficino), visual artists (Bronzino) and humanists (Angelo Poliziano) resurrect and transform the ancient Orpheus myth. The subsequent evolution of opera was influenced by (and influenced) innovations in stage comedy, the novel, and other art forms. In this course, we will explore these connections between the development of opera and other facets of Italian culture. No knowledge of Italian is required. The course will be taught in English; an additional Italian language discussion section will be offered for majors.
Instructor(s): J. Coleman
Area: Humanities.

AS.214.437. The Intellectual World of the Italian Renaissance. 3.0 Credits.
This course is intended to familiarize students with the intellectual world of Renaissance Italy, or more specifically, the "lost" Italian Renaissance of the long fifteenth century, from the time when Petrarch (1304-74) was in full maturity to the 1520s. During this period, most Italian intellectuals wrote the majority of their work in Latin – not the Medieval Latin of the Church and the universities but in what they saw as a more authentic Latin, like that used in ancient Rome, in the time of Cicero, Virgil, Quintilian, and others. These Renaissance “humanists,” inspiring by the example of Roman, and eventually Greek, antiquity, believed that they were carrying out a cultural renewal. Who were these humanists? Why then did they choose Latin (and a reformed Latin at that) instead of their “native” tongue as the language in which to effect this renewal? What did this choice afford them in terms of literature and philosophy? Why was this phase of literary and philosophical history undervalued in the evolution of modern scholarship? By the end of this course, you should be able to formulate answers to those questions. Some of the works of these authors still await editions, lying in manuscript libraries or difficult-to-access early printed editions. Many have now had their Latin texts edited, and a number have recently been translated into English. Students therefore have the chance to explore work in a field that is new and growing. A separate Renaissance Latin reading group will accompany the course for those who have studied Latin.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.445. Boccaccio’s Decameron and the Multiplicity of Story-Telling. 3.0 Credits.
Boccaccio’s Decameron (1352), a collection of 100 short stories, ranges from the bawdy through the cynical to the romantic and even fantastic. It has inspired numerous writers, artists, musicians and film-makers. We will read Boccaccio’s masterpiece on its own terms and in relation to the development of story-telling, from gossipy “news” (novelle) to artistic short story, theatrical adaptation, literary fairy-tale, and the fantastic. The Decameron will be compared with its forerunners in saints’ lives, bawdy fabliaux, and moral exempla, and with its literary, theatrical, and filmic imitators in Italy and Europe. Italian graduate students and undergraduate majors will attend an extra weekly meeting conducted in Italian. Those students should enroll in section 2 which will be awarded 4 credits.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.
AS.214.477. Magic, Marvel, and Monstrosity in the Renaissance. 3.0 Credits.
Magic, Monstrosity, and Marvels or Wonders call into question what we see and experience: what is reality; what is illusion; what's natural and what's supernatural? What's human and what's more, or less, than human? During the Renaissance, ideas about the nature of reality were bound up with questions and issues very different from those of our time. With the exact sciences still being invented, the nature of the world was much less hard and fast for Renaissance people than it is for the modern educated person. The literary masterpieces of the Italian Renaissance provide vivid illustrations of the early modern sense of wonder. Foremost among these are the theatrical comedies which Italian authors revived in imitation of the ancients, and the romances, especially Ariosto's Orlando furioso (1532) and Tasso's Gerusalemme liberata (1581). These and other works influenced ideas about magical and marvelous phenomena across Europe for centuries to come. Works will be read and discussed in English. Italian majors and graduate students (who should enroll in section 2) will attend a weekly supplemental discussion in Italian and compose their written work in Italian.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.479. Dante Visits the Afterlife: The Divine Comedy. 3.0 Credits.
Dante's Divina commedia is the greatest long poem of the Middle Ages; some say the greatest poem of all time. We will study the Commedia critically to find: (1) What it reveals about the worldview of late-medieval Europe; (2) how it works as poetry; (3) its relation to the intellectual cultures of pagan antiquity and Latin (Catholic) Christianity; (4) its presentation of political and social issues; (5) its influence on intellectual history, in Italy and elsewhere; (6) the challenges it presents to modern readers and translators; (7) what it reveals about Dante's understanding of cosmology, world history and culture. We will read and discuss the Commedia in English, but students will be expected to familiarize themselves with key Italian terms and concepts. Students taking section 02 (for 4 credits) will spend an additional hour working in Italian at a time to be mutually decided upon by students and professor.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.561. Italian Independent Study. 0.0 - 3.0 Credits.
Instructor(s): E. Refini; L. Di Bianco; P. Forni; W. Stephens.

AS.214.562. Italian Independent Study. 0.0 - 3.0 Credits.
Instructor(s): B. Wegenstein; E. Refini; L. Di Bianco; P. Forni; W. Stephens.

AS.214.597. Italian Literature Internship - Summer. 3.0 Credits.
Instructor(s): J. Coleman; P. Forni.

The course aims to outline the musical reception of Michelangelo's poems from the 16th to the 21st century. Moving from a critical introduction to Michelangelo's Rime, the course will address Michelangelo's own ideas on music and the few musical settings of his poems by contemporary composers. The course will turn then to the Post-Romantic renaissance of Michelangelo's myth as the context within which the main bulk of musical settings of the artist's poems was produced. What did composers such as Wolf, Britten, Dallapiccola, Shostakovich and Reimann find in Michelangelo's poetry? Through a close reading of the poems chosen by the composers, the course will explore the biographical, philosophical and socio-historical implications suggested by the different musical settings. No training in music performance or theory is required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

There are several reasons for which Verga's reputation is still struggling today. His language and formal devices can be perceived by contemporary readers as too regional or too outworn and predictable; while the subject of his books might be perceived as too remote and context-dependent. To put all this in a couple of questions the modern reader, whether or not from Italy, may think something like "What does a Sicilian writer of the 19th century, writing about the plotless economic difficulties of a Sicilian family have to say to me today? What do I have to learn from, or how can I relate to the stubborn psychologies of characters resisting technological transition of modernity, or being devoured by it?" This course aims to argue for Verga's relevance and actuality, both at the aesthetic and political level. By elaborating on the formal and psychological construction of characters, in particular "Ntoni in "I Malavoglia" (The House by the Medlar Tree), we will try to highlight that Verga's fictional minds are not just conventional representatives of a specific reality, but also tools for analysis. In our discussions, we will explore notions such as "borders", "border crossing", "internal migration", and "exilic writing". Readings and discussions will be in Italian. COURSE IS OPEN TO UPPER LEVEL UNDERGRADUATES.
Instructor(s): G. Furci
Area: Humanities
Writing Intensive.
AS.214.637. The Intellectual World of the Italian Renaissance.
This course is intended to familiarize students with the intellectual world of Renaissance Italy, or more specifically, the "lost" Italian Renaissance of the long fifteenth century, from the time when Petrarch (1304-74) was in full maturity to the 1520s. During this period, most Italian intellectuals wrote the majority of their work in Latin — not the Medieval Latin of the Church and the universities but in what they saw as a more authentic Latin, like that used in ancient Rome, in the time of Cicero, Virgil, Quintilian, and others. These Renaissance "humanists," inspired by the example of Roman, and eventually Greek, antiquity, believed that they were carrying out a cultural revival. Who were these humanists? Why then did they choose Latin (and a reformed Latin at that) instead of their "native" tongue as the language in which to effect this renewal? What did they accomplish in terms of literature and philosophy? Why was the phase of literary and philosophical history undervalued in the evolution of modern scholarship? By the end of this course, you should be able to formulate answers to these questions. Some of the works of these authors still await editions, lying in manuscript libraries or difficult-to-access early printed editions. Many have now had their Latin texts edited, and a number have recently been translated into English. Students therefore have the chance to explore work in a field that is new and growing. A separate Renaissance Latin reading group will accompany the course for those who have studied Latin.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

Although naturally and historically intertwined, music and poetry tended to be described in the early modern period as competing rather than interacting. By looking at both literary and theoretical texts, the seminar aims to explore the ways in which this controversial relation is revealed by the interplay of poetics, rhetoric, and music theory. Reading materials will include classical sources (e.g. Plato, Aristotle, Ps.-Longinus, Quintilian) and their early modern interpretations. Special attention will be given to Torquato Tasso, Giambattista Marino, and Giambattista Doni, whose works will be also discussed in the light of the contemporary development of musical genres (e.g. madrigals, opera). No musical skills required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.640. Film Theory.
The seminar deals with film theory in its history and its current trends. We will examine structuralist, post-structuralist, feminist, Marxist, psychoanalytic and other theoretical approaches to understanding and interpreting the cinematic medium. We will look at several different genres of contemporary films from Italy, France, Spain, and Latin American Film, from auteur-films to independent documentary collectives, animation films to blockbusters. We will invite at least one film theorist and one filmmaker to class during the semester.
Instructor(s): B. Wegenstein
Area: Humanities.

AS.214.655. Translating Knowledge: Brunetto's Tresor and Dante's Convivio.
By focusing on Brunetto Latini's Tresor and Dante Alighieri's Convivio, the seminar will examine the notion of "encyclopedic knowledge" in the Middle Ages. The two works — both examples of "translation" — call traditional ideas of knowledge into question. The seminar will study the Convivio as a response to the Tresor and will situate Dante's project within a wider discussion of vernacular translation as a key tool for the dissemination of the classical tradition in the Middle Ages.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

In the last decade in Italy, filmmakers and writers have been expressing, with increasing urgency, strong concerns about the environment while also attempting to raise awareness about the consequences of human manipulation of the natural world, the complicity of industry, government, and organized crime in illegal disposal of toxic waste, and the effects of economic and social malaise. This graduate seminar examines from an eco-critical perspective, a variety of literary texts and films, produced in Italy from the sixties to the present day. While reading foundational texts from environmental literary studies and the growing field of eco-cinema studies, we shall examine short stories and novels by Italo Calvino (Smog, A Plunge into Real Estate and Marcovaldo) and Carlo Cassola's The Nuclear Trilogy (1978-1982), as well as films by Pier Paolo Pasolini, Michelangelo Antonioni and Francesco Rosi. In the second part of the seminar we shall focus on contemporary novels, documentary and feature films that more explicitly deal with environmental degradation. Critical and theoretical readings will include Marco Armiero and Marcus Hall's Nature and History in Modern Italy, Rob Nixon's Slow Violence and Environmentalism of Poor, Serena Iovino's Ecocriticism and Italy, and Scott Macdonald's "Toward and Eco-cinema," among others.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.214.666. Primo Levi Today: Seventy Years After the First Publication of If This Is a Man (Survivor in Auschwitz).
How have genocides been represented by people with different backgrounds and sexual identifications? Do written testimonies challenge or reinforce the hegemonic accounts of wars and genocides? How is the relationship between the "personal" and the "public/national" theorized in literary texts dealing with wars and other forms of collective traumatic events? This course aims at exploring these questions, using Primo Levi's work as an anchoring point. Readings and discussions will be in Italian. COURSE IS OPEN TO UPPER LEVEL UNDERGRADUATES
Instructor(s): G. Furci
Area: Humanities
Writing Intensive.
This course will be taught from September 2 through October 14, 2015. The course aims to analyze the development of Foscolo’s poetry in the years between the eighteenth and nineteenth centuries (1798-1807), namely the development from the sonnets and the odes to the poems I Sepolcri, starting off from the most common models of the famous contemporary poets (Parini, Monti, Alfieri, Pindemonte) to arrive at a new understanding of “lyric poetry.” Furthermore, the lectures will focus on the discussions and controversy that arose with regards to the Sepolcri (with Pindemonte and others) immediately after publication, when the novelty of the poem aroused bewilderment and perplexity in many critics, readers and poets. The analysis of the anti-Foscolo writings that appeared at this time - and the replies of Foscolo himself - will show how most of the readers of that time, still tied to a static view of literary genres, were negatively affected by the audacity in the mixture of the various registers that characterize the poem (epic, lyric, elegy, satire, tragedy) held responsible both for the lack of formal and stylistic unity of the poem, and its complete obscurity. The class will be taught in Italian.
Instructor(s): F. Bausi
Area: Humanities
Writing Intensive.

AS.214.676. The Renaissance Comic Romance.
In the second half of the fifteenth century, Italian poets transformed the medieval adventure stories of Charlemagne’s and Arthur’s knights. Luigi Pulci’s earthy, bourgeois Morgante and Matteo Maria Boiardo’s romantic, courtly Orlando innamorato created two genres that led from Ariosto’s Orlando furioso through Folengo’s Baldus to inspire Rabelais’s Gargantua and Pantagruel, Cervantes’ Don Quixote, and, eventually, the European novel. The course concentrates on the works of Pulci, Boiardo, and Folengo, combining close analysis of their linguistic and narrative fabric with examples of their influence on later comic masterpieces.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.684. The Commentary Tradition and the Birth of Literary Scholarship.
The practice of commenting on texts lies at the foundations of what we call today “literary criticism.” From the Bible to Dante’s Divine Comedy, from Greek and Latin poetry to medieval and Renaissance literary writings, the many questions posed by the commentators have contributed widely to the shaping of the modern notions of reading and interpretation. What do we look for when we read a text? How do we approach it? How does our reading interact with the author’s intention? To what extent is the commentator appropriating the author’s prerogatives? By exploring a wide range of case studies, the seminar aims to reassess the role of the commentary tradition within the development of literary scholarship and as a genre per se. Some sessions will take place at the Hopkins Special Collections and at the Walters Art Museum, where students will have the opportunity to work on both manuscripts and early prints, and select materials for their presentations.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.689. Flânerie and Female Authorship in Contemporary Italian Cinema.
This course examines the prolific production of Italian women filmmakers inscribing their work into a national cinematic tradition. The most prominent visual leitmotif in films by directors such as Marina Spada, Francesca Comencini, Alice Rohrwacher and others, is that of the wandering woman contemplating the cityscape. What does the act of walking signify in these works? How do these filmmakers embrace and transform Italy’s cinematic tradition? After highlighting the figure of the city-walker in post-war classics by Roberto Rossellini and Vittorio De Sica, we shall discuss from a gender perspective films such as Fellini’s Nights of Cabiria, Pasolini’s Mamma Roma, and Antonioni’s La Notte, which feature female city-walkers who stroll throughout urban peripheries created during the country’s rush toward modernity. Then, we shall analyze the work of women directors who recurrently employ the narrative strategy of flânerie to construct female narratives of displacement and liminality. We shall question how and to what extent this contemporary cinematic production is indebted to the masters of neorealism and the auteurs from the sixties. Critical and theoretical readings will include essays by Michel de Certeau, Siegfried Kracauer, Janet Wolf, Elizabeth Wilson, Anne Friedberg, Giuliana Bruno, and others.
Instructor(s): L. Di Bianco
Area: Humanities
Writing Intensive.

The metaphor of the theatre of the world is a long-lasting one: from antiquity to our own days through the Middle Ages, the Renaissance, and the Baroque, the idea of the world as a stage has been the core of both dramatic writings and discourses on drama. By considering the metaphor and its meanings in a broad chronological perspective, the seminar aims to identify key moments in its evolution. In particular, it will focus on the ways in which – within the production of early modern morality plays – the metaphor of the theatrum mundi regained its literal meaning by being represented on stage. Along with a selection of allegorical plays and relevant visual materials, we will consider theoretical sources including classical and Christian authors, neo-platonic writings and medieval exegesis, Renaissance thinkers such as Pico della Mirandola and modern philosophers such as Walter Benjamin.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

This course explores the history and evolution of documentary filmmaking in Italy through the study of non-fictional works dealing with different social, political, and personal matters from the post-war period to the last decade. We shall screen the works of Vittorio De Seta, Ernesto De Martino, Alberto Grifi, Cecilia Mangini, Annabella Miscuglio, as well as the works of iconic directors such as Michelangelo Antonioni, Luchino Visconti, Pier Paolo Pasolini, and Ermanno Olmi, considering their fiction and non-fiction films in dialectical relationship to one another. Moreover, this course devotes particular attention to late, contemporary female production (e.g. Alina Marazzi, Costanza Quatriglio, and Eleonora Danco) that, through the use of found footage and hybrid modes, blurs the boundaries between fiction and non-fiction, the real and the surreal. Critical and theoretical readings include Marco Bertozzi’s Storia del documentario italiano, Bill Nichols’ Representing Reality, and others.
Instructor(s): L. Di Bianco
Area: Humanities.
AS.214.711. Dissolving Margins: Space and Female Subjectivity in the Work of Elena Ferrante.
Elena Ferrante is Italy’s most acclaimed contemporary novelist, although her true identity remains unknown. Having been translated into multiple languages and published in 39 countries, with over a million of copies sold in the United States alone, her ‘Neapolitan Quartet’ triggered what has been called “Ferrante Fever.” This course investigates the reasons behind this global, literary phenomenon while exploring themes such as female subjectivity and the interplay with space and society, the question of female authorship, women’s participation in, or exclusion from, history, and the internal violence of a rapidly changing society. We shall read Ferrante’s entire oeuvre: Troubling Love (1999) The Days of the Abandonment (2002), and The Lost Daughter (2006), the Neapolitan Quartet (2012-2014), as well the collection of letters and essays Frantumaglia. (2016). Theoretical readings will include essays by Julia Kristeva, Luce Irigaray, Steve Pile, and others.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.214.716. Translation and Vernacular Readership in Italy, 1250-1500.
Translation is usually acknowledged as instrumental to the rise of vernacular readership in medieval and early modern Europe. By reconsidering seminal contributions such as Erich Auebarch’s, this seminar will explore the textual and cultural implications of the translative process that played a major role in the medieval reception of antiquity. Special attention will be given to translation theory and its history.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

Giambattista Vico’s Principi di scienza nuova d’intorno alla comune natura delle nazioni (1725, 1730, 1744) was intended to found an “ideal” and “eternal” model of human development, valid for all societies. Vico considered his project both philology and philosophy, and tried to revolutionize thinking about human history as practiced between about 1550 and 1700, by exposing misconceptions behind attempts to square “sacred history” (the presumed historical accuracy of the Bible) with “profane” or non Judeo-Christian concepts of history, both ancient and modern. The culture shock underlying this “old science” stimulated Vico to base philosophical and historical knowledge of mythology on a conception of narration. Recommended Course background: Italian and Latin
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.753. Tasso the Madman.
In late sixteenth-century Europe, Tasso's name was a synonym for madness. The Elizabethan stage hosted a play on "Tasso's Melancholy"; Montaigne belatedly recalled observing the "mad poet" in prison. Biographers and dramatists spread the myth into the nineteenth century, but Tasso's dialogues and letters tell a more complex and nuanced story of suffering and struggle, life and work.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.792. GRLL SEMINAR/Fellini - Almodóvar.
In this co-taught graduate seminar, Professors Eduardo González and Bernadette Wegenstein will be discussing these two seminal European directors in their cultural and historical context and with an eye to both their radical eccentricity and utter centrality to cinema today (e.g., The Great Beauty). Our discussions will start with questions that are intrinsic to film theory such as mimicry, travesty, the visual and narrative construction of the erotic, as well as questions pertaining to the degree of realism in these directors’ work, i.e., the “road beyond neorealism” for Fellini, and Almodóvar’s queerness as expressed in his "true-and-false testimonies." We will then proceed to read and watch some historical documents around the constructions of some of these directors’ films, such as Petronius’ Satyricon, about the worshiping of the most important female deity in late antiquity, Isis, in light of Fellini’s Satyricon; and Thierry Jonquet’s novel Tarantula and the French-Italian horror film, Eyes Without a Face (1960), which were both the basis for Almodóvar’s The Skin I Live In (2011). We will be reading Karen Pinkus’ Montesi Scandal, an unrealized screenplay about the birth of the Paparazzi in Fellini’s Rome, as well as Almodóvar’s columns from La Luna de Madrid, written in the persona of a female prostitute. The class will also include several guest speakers TBA.
Instructor(s): B. Wegenstein; E. Gonzalez
Area: Humanities.

AS.214.852. Italian Foreign Language Teaching Practicum II.
Required for First year Italian Graduate Students. This course will not have a scheduled meeting time.
Prerequisites: AS.214.851
Instructor(s): A. Zannirato
Area: Humanities
Writing Intensive.

AS.214.861. Italian Independent Study.
Instructor(s): E. Refini; L. Di Bianco; P. Forni; W. Stephens.

AS.214.862. Italian Dissertation Research.
Instructor(s): E. Refini; L. Di Bianco; P. Forni; W. Stephens.

AS.214.863. Italian Proposal Preparation.
Instructor(s): E. Refini; L. Di Bianco; P. Forni; W. Stephens.

3.0 Credits.
Comics and short stories are literary forms that succeed by at once embracing and defying their apparent limitations. This course provides a comparative understanding of the evolution of the two forms in Latin America by bringing together the works of legendary comic artists like Quino (Argentina), Rius (Mexico), and Los Bros Hernandez (USA) with short form masterpieces by authors including Jorge Luis Borges, Julio Cortázar, Elena Garro, and Rosario Castellanos. Students will learn critical strategies for approaching and evaluating marginalized and alternative literatures and will deepen their understanding of the histories and cultures of Latin America in the 20th and 21st centuries. Class taught in English.
Instructor(s): C. Ray
Area: Humanities.
AS.215.231. Introduction to Literature in Spanish. 3.0 Credits. 
The main objective of this course is to examine and discuss specific authors and topics in literature in Spanish from the Middle Ages to the 20th century. The course is designed to cover a selection of Hispanic texts from Spain and Latin America. Literary genres to be studied will include narratives, poetry, and drama. The bulk of each class session will be dedicated to the discussion of the assigned readings. This course is taught in Spanish. This course is required for the major in Spanish. 
Instructor(s): E. Gonzalez 
Area: Humanities. 

AS.215.243. Freshman Seminar: The Middle Ages in Film. 3.0 Credits. 
The Middle Ages and medieval themes are ubiquitous in popular movies of our times. This course studies the Middle Ages as they have been portrayed in film, with a focus on Spain. Course materials include studies on the imaginative uses of the Middle Ages as well as films like The Cid, Tirante el Blanco, Ladyhawke, and Destiny, among others. 
Instructor(s): N. Altschul 
Area: Humanities. 

AS.215.253. Borges on Islam, Judaism and Christianity. 3.0 Credits. 
This class offers an introduction to the life and works of world-renowned Argentine author Jorge Luis Borges. It offers students an opportunity to make an in depth examination of several of his most notable essays, short stories, and a few of his poems. The class is centered on texts which refer directly or indirectly to the relationship between national identity and religion. Questions will arise, such as: are literary portrayals of Islam related to politics? Do all Argentines consider that Argentine-Jews are Argentinean? Why is this? If we are the West, what is the Orient? 
Instructor(s): M. Ruhlmann 
Area: Humanities. 

AS.215.265. ELECTRIC APOCALYPSE: Rock in Latin America. 3.0 Credits. 
Rap, Metal, Punk Rock, and the other children of Rock and Roll are a global phenomena, and can serve as a site wherein hegemonic ideological culture is contested and resisted. These musical vocabularies manage to noisily articulate the voice of otherwise silent resistance by cultivating a peculiar and often paradoxical relationship with violence. This course will take Tristan Garcia’s dialectic of “electric adolescence” as a point of departure for analysis of the relationship between music, violence, and social critique in Latin America. 
Prerequisites: AS.210.212 
Instructor(s): C. Ray 
Area: Humanities. 

AS.215.271. Life and Death: Philosophy in Spain. 3.0 Credits. 
If there is an essence of Modern Spanish philosophy, the debate which raged between Miguel de Unamuno and José Ortega y Gasset provoked each thinker to realize that essence in profoundly divergent ways. And yet, what connects the two figures is a shared fascination with the rigorous investigation of their social reality and the mystery of the self. This course will examine the works and lives of Unamuno and Ortega y Gasset and, with the aid of Kierkegaard and Nietzsche, strive to understand their confrontation with eternity and mortality. 
Instructor(s): C. Ray 
Area: Humanities 
Writing Intensive. 

AS.215.307. Cervantes: Don Quixote and The Exemplary Novels. 3.0 Credits. 
In this course we will read the most important narrative works of Miguel de Cervantes, Don Quixote and the Exemplary Novels, works that are widely understood to have changed western literature. We will read both works in the English translation by renowned translator Edith Grossman, who will also visit Hopkins during the semester. Those who wish to receive credit toward the Spanish major will read the books in the original and attend a separate section conducted in Spanish. Those students should enroll in section 2 of the course. 
Instructor(s): W. Egginton 
Area: Humanities 
Writing Intensive. 

AS.215.312. The Great Latin American novel according to Carlos Fuentes. 3.0 Credits. 
An investigation into the historical development of the great Latin American novel according to Carlos Fuentes new book on the subject. Course includes reading novels by machado de Assis, Garcia Marquez, Carlos Fuentes, Vargas Llosa, Cortazar and Piglia 
Instructor(s): S. Castro-Klaren 
Area: Humanities. 

AS.215.315. Literature of the Great Recession. 3.0 Credits. 
The Great Recession—sometimes called the financial crisis or the economic crisis of 2008—brought financial markets to a halt and created significant political turmoil across the North Atlantic. But its impact on culture, and literature especially, has often been ignored. This seminar will travel across Europe, from Dublin to Madrid, from London to Reykjavik in order to examine how literature has registered this most recent economic crisis. We will focus on how crisis is narrated and the ways in which literary works have managed to provide a voice for marginalized social, economic, and political demands. 
Instructor(s): B. Seguin 
Area: Humanities. 

The readings bring into consideration the question of terror (of war) and displacement as experienced by migrants in novels by prize winning authors such as Arguedas, Vargas Llosa, Alarcon, Riesco, Roncagiolo and Silva Passuni. 
Instructor(s): S. Castro-Klaren 
Area: Humanities 
Writing Intensive. 

AS.215.336. Don Quijote. 3.0 Credits. 
A close reading and discussion primarily in Spanish of Cervantes’ masterpiece, with concentration on its major themes and contributions to the formation of the modern novel. We will use A. Murillo’s edition of the novel, Editorial Castalia. 
Prerequisites: AS.210.311 AND AS.210.312 
Instructor(s): H. Sieber 
Area: Humanities. 

AS.215.337. Teatro Espanol del Siglo del Oro. 3.0 Credits. 
Close reading of various Spanish authors, among them Lope de Vega, Calderon de la Barca, Moreto, and Zorilla. Students should have taken courses beyond intermediate level or advanced Spanish. This class will be conducted primarily in Spanish as a seminar and will require active participation and discussion. Papers will be written in Spanish. Undergraduate Seminar. 
Instructor(s): H. Sieber 
Area: Humanities.
AS.215.338. Introduccion a la literatura argentina. 3.0 Credits.
La literatura se enmarca en la realidad social y es una ventana hacia la cultura. En esta introducción consideraremos diferentes temas de especial importancia en la cultura y literatura argentina, como la separación entre la ciudad (puerto, civilización, contacto europeo) y el campo (provincias, barbarie, tradicionalismo rural) que empieza con el texto fundacional de Domingo F. Sarmiento, Facundo. Observaremos asimismo que esta influyente dicotomía que se establece con la independencia política es modificada con la llegada masiva de inmigrantes a fin de siglo y finalmente pierde su fuerza con la dictadura militar de los años ‘70 y con el desencanto neoliberal que estalla con la crisis del 2001.
Instructor(s): N. Altschul
Area: Humanities.

AS.215.343. Nación criolla: cultura y literatura en el siglo XIX. 3.0 Credits.
El curso examina la formación de nuevas identidades hispanoamericanas y la búsqueda de un pasado que las haga legítimas, especialmente en el Cono Sur (Chile, Argentina, Uruguay). Consideraremos en particular las relaciones con el pasado español y con el pasado amerindio en textos políticos, críticos y literarios de figuras clave del siglo diecinueve, e.g. Domingo Faustino Sarmiento, Andrés Bello, Simón Bolívar, Esteban Echeverría, y José Victorino Lastarria.
Instructor(s): N. Altschul
Area: Humanities.

AS.215.345. Children & Adolescents in Latin America. 3.0 Credits.
Through the close reading of primary texts written by or about adolescents, this course examines youth participation in Latin American art and society from the mid 20th century. Students wishing to complete the writing portions of the course in Spanish or Portuguese should enroll in section 2 which will award 4 credits instead of the usual 3.
Instructor(s): L. Reynolds
Area: Humanities.

AS.215.350. Mexico: A cultural history from the Olmecs to the Mexican revolution of 1910. 3.0 Credits.
The offers a survey of Mexican culture from the formative years of the Olmecs (2000 b.c.) to the Mexican revolution of 1910. History of ideas, matrix social formations, art and literature are the focus of this historical overview.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.353. Women Writing in Latin America: Prose and Poetry by Sor Juana, Mistral, Lisoba, Pizarnik, Castellanos, and other poets. 3.0 Credits.
The first objective of the course is to train students in close reading and analysis of literary texts. The second objective is to read prose and poetry by some of the canonical texts in the Latin American tradition written by women. Taught in English.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.361. A multidisciplinary Introduction to the Study of Latin America. 3.0 Credits.
The course brings together knowledges drawn from the fields of geography, history, anthropology, literature and art in order to provide access to the complexity of “Latin America”. Students may opt do the reading in the original Spanish or Portuguese and also write in either language.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.363. Film and Franquismo: Repression and Resistance in Spanish Cinema. 3.0 Credits.
This course will examine the cinema of Spain that was produced from the onset of the Spanish Civil War in 1936 until the death of dictator Francisco Franco in 1975. The films we will analyze include partisan documentaries, government propaganda shorts, escapist musicals, wry comedies, neo-realist thrillers, iconoclastic dramas, and meditations on national and personal trauma. In addition, we will contextualize our analyses by reading seminal works of Spanish cultural history, social criticism and film theory. This course is taught in English.
Instructor(s): C. Koze
Area: Humanities.

AS.215.380. Modern Latin American Culture. 3.0 Credits.
Taught in Spanish. This course will explore the fundamental aspects of Latin America culture from the formation of independent states through the present—in light of the social, political, and economic histories of the region. The course will offer a general survey of history of Latin America, and will discuss texts, movies, songs, pictures, and paintings, in relation to their social, political, and cultural contexts. May not be taken satisfactory/unsatisfactory.
Prerequisites: AS.210.312; Students may earn credit for AS.211.380 or AS.215.380, but not both.
Area: Humanities.

AS.215.388. Narrating Mexico: Novel and History. 3.0 Credits.
The 200 years since the eruption of Mexican Independence present a panorama of struggle, strife, and literary creation. This course explores how Mexican literature formulates, contests and conditions portrayals of the national reality of Mexico. Taught in Spanish. Recommended Course Background: Advanced Spanish I or another Spanish survey course.
Instructor(s): C. Ray
Area: Humanities
Writing Intensive.

AS.215.390. Modern Spanish Culture. 3.0 Credits.
This course will explore the fundamental aspects of Spanish culture from the nineteenth to the twenty-first centuries. The course will offer a general survey of the history of Spain and will discuss texts, movies, songs, pictures, and paintings in relation to their social, political, and cultural contexts. This course will be of particular interest for students planning on spending a semester abroad in Spain—specially for those students going to the JHU Fall Semester in Madrid, at Carlos III University. Taught in Spanish. Recommended Course Background: AS.210.311 or appropriate Webcpace score. AS.215.390 was formerly numbered AS.211.390
Prerequisites: Students may not have previously completed AS.211.390.
Area: Humanities.
AS.215.402. Senior Seminar: Literaturas y culturas del Cono Sur: Argentina, Uruguay y Chile. 3.0 Credits.
Focus on twentieth and twenty-first century literary authors, filmmakers, and various other media.
Prerequisites: AS.210.311
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.403. Cine en Común. 3.0 Credits.
Eleven commercial films in Spanish closely examined through screenings, class discussion, and short papers. Besides basic film appreciation, the course intends to develop a common critical vocabulary between Spanish and English to discuss movies in plain language and in terms relevant to social issues
Prerequisites: AS.210.312
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.404. Cuba Between Heresy and Revolution. 3.0 Credits.
We will examine the Stalinist and Leninist refashioned doctrines of Fidel Castro and Ernesto Che Guevara; Cuba's Devil's Pact with Obama; the decline to near breakdown of Cuba-Venezuela Alba dual nation Chavismo; and the startling implications that all of it poses to the rise of sham populism in America. We will press hard into the fabric of Cuba's battered daily lives, mostly in greater Havana, but also in Miami. Among others, the work of filmmaker Fernando Pérez, the fiction of Leonardo Padura, and Mariel exodus artists will inform our discussions. Our shared hypothesis: that post-revolutionary national sovereignty, coupled with Cuban exile irreidentism, may have engendered the island's dual nation status, tied to Miami's so-called Cuban enclave. As a result, a theologico-political confessional crisis continues into infinity in terms of plural and bipolar heresies supported by US electoral mapping and lobbying, and in some minds having Cuba become the Fifty-First US state.
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.406. Novelist Intellectuals. 3.0 Credits.
What does a novelist's op-ed about economics have to do with her literary writing? In what ways does a fiction writer's essays on the environment inform how we read her novels? What happens when we find the political opinions of a writer objectionable? This undergraduate seminar will consider what the Spanish writer Francisco Ayala termed "novelist intellectuals," that is, literary writers who actively participate in a society's public sphere. Considering writers from Madrid to New York, from London to Buenos Aires, we will ask how one should hold a novelist's fictional and non-fictional writings in the balance and explore ways of reading that allow us to consider the public intellectual side and the aesthetic side of a novelist together.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.411. Folly & Insanity in Spanish Culture: Origins of Modern Madness in the Literature of Spain. 3.0 Credits.
What is human madness? Taking into account Foucault's famous dictum, "There can be no madness without society, " this course returns to the earliest constructions of madness in the early modern period and moves forward into modernity through a close reading of literary, philosophical and scientific texts published in Spain. Readings include: Cervantes, Leon Hebreo, Huarte de San Juan, Lope de Vega, Calderon, Galdos, Freud, and others. Earlier representations of mental disquiet will be compared with the latest advances in psychology and neuroscience published in the JHU Gazette and the HUB. Recommended Course Background: AS.210.312
Instructor(s): G. Ponce
Area: Humanities
Writing Intensive.

AS.215.412. Populism. 3.0 Credits.
What do Hugo Chávez, Marine Le Pen, and Donald Trump have in common? According to many from across the political spectrum, they are all populists. But what is populism, exactly, and how can it describe such disparate phenomena as left-wing social movements, xenophobic anti-immigrant policies, and economic redistribution? This advanced seminar will examine the history, culture, and political theory of populism. We will pay special attention to the resurgence of populism after the Great Recession and examine a number of cases from Latin America, Europe, and the United States.
Instructor(s): B. Seguin.

AS.215.413. Cuba y España. 3.0 Credits.
La frase "más se perdió en Cuba" alude al singular rango de la antigua Provincia de Ultramar en el mapa geopolítico del colonialismo hispánico. Hemos de estudiar la prolongada relación entre España y Cuba, desde 1492 al presente, a través de materiales literarios, crónicas, artes plásticas, música y medios sociales al corriente. Enseñado íntegramente en español.
Prerequisites: AS.210.311
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.415. Horror in Spanish Literature. 3.0 Credits.
While our modern conception of "horror" owes much to English literature of the 19th century, it has an under-appreciated precedent in the literature of the Spanish Golden Age. In this course we will read tales of witches, monsters, and the living dead from an age that pre-dates ours by 400 years, but whose darkest fears are surprisingly familiar.
Instructor(s): W. Egginton
Area: Humanities
Writing Intensive.

AS.215.422. Amor y romanticismo en una novela y tres películas. 3.0 Credits.
Prerequisites: AS.210.311 AND AS.210.312
Instructor(s): E. Gonzalez
Area: Humanities.
AS.215.440. The Picaresque Novel in Spain. 3.0 Credits.
Readings will include selections from Medieval and Renaissance Works, such as “El Conde Lucanor”, “Amadís de Gaula”, “La carcel de amor”, “El Abencerraje”, “Lazarillo de Tormes”, “La Diana”, “El buscon”, “Novelas ejemplares” (Cervantes) and “Don Quixote”.
Instructor(s): H. Sieber
Area: Humanities.

AS.215.443. Hispanic Literatures and the Arts. 3.0 Credits.
Literary works from different genres (fiction, drama, poetry) by authors from Spain and Latin America are studied and illustrated in reference to the plastic and visual arts and cinema, indigenous, popular, and religious cultures. Cross-listed with PLAS
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.452. Che Guevara and Magical Realism. 3.0 Credits.
His detractors often compare him to Hitler while many of his admirers see in him a saint and a martyr like Jesus Christ. Cuban school children are taught to be like him. Che was killed in 1967, the same year in which Gabriel García Márquez published Cien años de soledad (One Hundred Years of Solitude). We will study Guevara’s life as a militant revolutionary through his own writings and the exorbitant style known as realismo mágico, crafted by García Márquez, one of Che’s great admirers. Four movies will anchor our visual take on the myth and the man: Los diarios de motocicleta (Walter Salles, 2004), Che I and Che II (Steven Soderbergh, 2008), and Wall Street (Oliver Stone, 1987). The nineteen-eighties narcotraffic boom in Colombia and the cocaine-driven financial high times during the late Reagan years will frame our study. Taught in Spanish
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.458. Cuba and its Culture Since the Revolution. 3.0 Credits.
We will study the visual and textual arts, cinema, political culture, and blogosphere; reaching back to the first phases in the building of the revolutionary state apparatus and its sovereign mandate. Taught in Spanish.
Prerequisites: AS.210.312
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.463. Borges: His Fiction and Critical Essays. 3.0 Credits.
This course will deal with close readings of Borges ficciones and critical essays in order to determine how his thinking on the problem of writing and thinking is fictionalized in his stories.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.464. Senior Seminar: El Caribe como problema. 3.0 Credits.
Recommended for Spanish majors and anyone fluent in the language. The course explores through diverse media and Hispanic-Afro-Descendant Caribbean/Anitllene societies, from the early Spanish conquest to the current crises in Caribbean Venezuela, Colombia, Mexico, and Florida. Taught in Spanish
Prerequisites: AS.210.311 OR AS.210.312 or equivalent test score.
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.476. El “moro” de al-Andalus al Siglo de Oro y América. 3.0 Credits.
Este curso examina la figura del “moro” en el medieval, la modernidad temprana, y las colonias americanas desde la conquista islámica de 711 hasta la expulsión de los moriscos en 1614. Temas incluyen identidades híbridas, “arabizadas” y transculturales de conquistadores y conquistados; los comienzos andalusíes de la picaresca; el estilo mudéjar en España y las colonias americanas; y los festivales de “moros y cristianos” en la América colonial entre otros. Las lecturas incluyen selecciones del Mio Cid, el Conde Lucanor, las Guerras civiles de Granada, “Ozmín y Daraja”, “El Abencerraje”, la “Conquista de Jerusalén” de Tlaxcala 1539, y episodios de Don Quijote.
Prerequisites: Prereq: AS.210.311
Instructor(s): N. Altschul
Area: Humanities.

AS.215.477. La Habana Miami: One World and Two Cities. 3.0 Credits.
A tale of two cities approach to the exceptional bond between two nations in the age of migration. The arts, the blogosphere, cinema and music and the vast unknown.
Prerequisites: Pre-req: AS.210.312
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.484. Orientalismo al Sur. 3.0 Credits.
Taught in Spanish. Este curso examina la presencia del Islam y el concepto del “oriente” en el Cono Sur, especialmente Argentina. Leeremos obras de los siglos 19 y 20 que representan al oriente, y discutiremos los significados y cambios que la llegada de inmigrantes “islamicos” produjo en la cultura literaria de esta zona de América Latina. Tendremos en cuenta de forma particular que el problema del “oriente” en España y sus colonias es un problema “interno”. Debido a que la península ibérica tuvo una importante presencia musulmana durante toda la edad media, en los circulos europeos España fue considerada “islámica” u “oriental” también durante los tiempos modernos. Es así que el Oriente llega a América con la conquista de los españoles “islamizados.” Cross-listed with PLAS
Instructor(s): N. Altschul
Writing Intensive.

AS.215.489. Poetry in Latin America: A multilingual survey from 1200 to the present. 3.0 Credits.
The course focuses on a presentation of the multiple traditions of poetry writing that make up the Latin American tradition from the Mexico poets at about 1200 to current writers in Latin America. Original poetry in Nahua, Maya-Quiche, Spanish and Portuguese will be read along side translations into English. Attention will be paid to translation theory.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.490. Reading Ancient Mexico Today: Amoxtli, Tlacuilos and the Florentine Codex. 3.0 Credits.
This course offers an in depth study of “Mexican” writing systems before and after the Spanish Conquest in 1521. Special emphasis is placed on the role of the tlacuilos—nahuatl intellectuals— in the writing of the Florentine Codex (1584), the largest surviving compendium on pre-conquest Mexico.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.525. Spanish Independent Study. 1.0 - 3.0 Credits.
Instructor(s): B. Seguin; E. Gonzalez; H. Sieber; S. Castro-Klaren; W. Egginton.
AS.215.526. Spanish Independent Study. 0.0 - 3.0 Credits.
Instructor(s): B. Seguin; E. Gonzalez; H. Sieber; S. Castro-Klaren; W. Egginton.

AS.215.527. Spanish Internship. 1.0 Credit.
Instructor(s): E. Gonzalez.

This seminar will be based on close readings of the 'Lazarillo de Tormes', selections from Mateo Aleman's 'Guzman de Alfarache', and three of Cervantes' 'Novelas ejemplares.' These texts reflect the impact that Spanish fiction exerted on Golden Age Spanish literary history and on the European novel in general. An extensive bibliography will also be covered.
Instructor(s): H. Sieber.

AS.215.635. Spanish Golden Age Theater.
Close reading of plays by lope de Vega, Calderon, Tirso de Molina, and others.
Instructor(s): H. Sieber
Area: Humanities.

AS.215.639. Don Quijote de la Mancha.
The novel will be the focus of the entire seminar. Recent trends in Cervantes criticism, textual issues related to the novel's publication, biographical, cultural, and social history, and patronage in the Courts of Philip II and III will be topics of discussion and research. The goal is a wide-ranging appreciation and understanding of the novel's original contexts.
Instructor(s): H. Sieber

AS.215.642. Readings in Contemporary Literary Criticism and Theory.
This course is a graduate level survey of contemporary trends in literary theory and criticism. Readings will span all aspects of literary and cultural scholarship and may include such topics as: new materialism, new formalism, affect theory, Marxism, literary history, and comparative literature.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.646. The Narrative of Conquest in the Andes, 1530 - 1680.
Departing from narratology and the perspective of post-colonial studies, the course will analyze the narrative of conquest as developed by Cieza de Leon, Garcilaso de la Vega, Inca, Guaman Poma, Jose de Acosta and William Prescott.
Instructor(s): S. Castro-Klaren.

From neuroscience to political theories, we will examine early modern and late modern works in literature and critical thought in which dreams and dreaming intersect with power under diverse political regimes and modalities.
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.650. Mexico and the Invention of America.
Departing from O’Gorman, the course will entail a reconsideration of the discursive invention of Mexico-America. Anonymous, Sahagun, Clavijero, Humboldt, Dussel and Alzandua will conform part of the readings. Taught in English
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

This course will focus on the art of writing poetry, the art of reading poetry and the poetics of each of the poets whose work is the textual matter of the course.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive

Readings from colonial times to the present from three cultural legacies, Hispanic, English and French. Centered on slavery and its sequels.
Instructor(s): E. Gonzalez

AS.215.667. Cities in Motion, Worlds Adrift.
We will explore the comparative phenomenology of the city in historical reference to literary, cinematic, and TV serial values. Modalities of segregation and divisiveness will dominate our inquiry. Undergrads by request and with approval of instructor.
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.710. Medievalisms.
This course examines variegated constructions and redeployments of “the middle ages” in postmedieval times. Topics include historical revivals, the national philologies, literary, and filmic reconstructions, postcolonial medievalisms, and theories of temporality, among others. Readings in English and Spanish.
Instructor(s): N. Altschul.

AS.215.713. What Are Humanities?.
They are one of three established divisions of knowledge. Almost half the departments at our own university are categorized under that division. We all feel we know what the “humanities” are, but how? Is the best answer we have to that question a paraphrase of Justice Potter Stewart’s definition of pornography, “I know them when I see them”? In this seminar we will examine the question of what the humanities are through the close reading of a series of key texts spanning the period from the Renaissance to the twentieth century. In many ways our readings will be necessarily proleptic, since the very category we are interrogating postdates many of the sources we will be analyzing. Our guiding question, however, will be how the specific division of knowledge under which we now organize our disciplines came into being, and what presuppositions that organization implies. The course will be conducted in English but will include, to the extent possible, readings in the original language. Graduate students should be prepared to work in the original language if it is one that they already master (which may include Latin, Spanish, Italian, French, or German) and with translations when not. Readings may include selections by Desiderius Erasmus, Lorenzo Valla, Juan Luis Vives, Juan Ginés de Sepulveda, Francisco de Vitoria, Bartolomé de las Casas, Denis Diderot, Johann Wolfgang von Goethe, Immanuel Kant, Martin Heidegger, Maurice Merleau-Ponty, and Jean-Paul Sartre.
Instructor(s): W. Egginton
Area: Humanities.

AS.215.714. What Are Humanities?.
This course will focus on the art of writing poetry, the art of reading poetry and the poetics of each of the poets whose work is the textual matter of the course.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.
How should one study contemporary literature and culture? Is “the
contemporary” a period in and of itself? Does it require a distinct
categorial approach? This graduate seminar will examine various
approaches that have emerged since Michel Foucault called his
genealogies a “history of the present.” We will pay special attention to
contemporary literature and culture’s most distinguishing feature today:
crisis. Considering theories of crisis and “the contemporary” together, the
course will explore how living in a time of overlapping crises—economic,
political, social, cultural, environmental, and others—affects the way we
interpret the world.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.735. The Boom Revisited. Visions by Carlos Fuentes, Garcia
Marquez, Diane Goodrich and the MLA.
Now that Carlos Fuentes has written his history of the Latin American
novel, that a biography of Garcia Marquez is out and several retrospective
studies on the making and impact of the “boom” are circulating, it is time
to reconsider the boom as a force in the making of the cannon and a
paradigm for narrative interpretation. Besides three long critical studies
and the MLA’s “how to teach the boom,” the seminar will consider in detail
three key novels: La muerte de Artemio Cruz, Cien anios de soledad, and
La casa verde.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

A close reading of Cervantes’ short stories, with concentration on their
literary tradition and their relationship to some of his other works. We will
also investigate Spanish court society, politics, and history between 1598
& 1621 and critical bibliography.
Instructor(s): H. Sieber.

The course engages close readings of Borges critical essays and some
of his fiction in order to establish the points of interpellation that Post-
modern theory takes from or shares with Borges’s meditation on the
problem of writing.
Instructor(s): S. Castro-Klaren.

Readings will include selections from Medieval and Renaissance Works,
such as “El Conde Lucanor”, “Amadís de Gaula”, “La carcel de amor”,
“El Abencerraje”, “Lazirillo de Tormes”, “La Diana”, “El buscon”, “Novelas
ejemplares” (Cervantes) and “Don Quixote”.
Instructor(s): H. Sieber
Area: Humanities.

AS.215.753. Latin American Premodern.
Focusing on the idea that Iberian colonization was premodern in
character, this course examines the association of Spanish and
Portuguese America with topics like feudality, the orient, despotism,
and medieval cultural lifestyles. Among others, theoretical discussions
include the medieval-modern divide, (neo)medievalism, settler
postcolonial theory and comparative colonialisms, modernization
and dependency theories; texts include, among others, Argentines
Rafael Oviedo and José Ingenieros, Brazilians Euclides da Cunha
and Gilberto Freire, Peruvian José Carlos Mariátegui, and Cuban Alejo
Carpentier.
Instructor(s): N. Altschul.

AS.215.778. Topics in Baroque and Neobaroque Literature.
This seminar we will look at theories and source texts comprising the
cultural production known as the Baroque and Neobaroque, categories
that extend to and include some twentieth-century and contemporary
aesthetic practices. Although the focus of the seminar will be largely
literary and theoretical, we will look at some examples of visual culture
as well. Students will prepare several presentations and a final research
paper. Presentations in the second portion of the course should be
prepared in reference to a primary corpus you intend to write you final
paper on.
Instructor(s): W. Egginton
Area: Humanities
Writing Intensive.

AS.215.792. GRLL SEMINAR/Fellini - Almodóvar.
In this co-taught graduate seminar, Professors Eduardo González and
Bernadette Wegenstein will be discussing these two seminal European
directors in their cultural and historical context and with an eye to
both their radical eccentricity and utter centrality to cinema today
(e.g., The Great Beauty). Our discussions will start with questions that
are intrinsic to film theory such as mimicry, travesty, the visual and
narrative construction of the erotic, as well as questions pertaining to
the degree of realism in these directors’ work, i.e., the “road beyond
neorealism” for Fellini, and Almodóvar’s queerness as expressed in his
“true-and-false testimonies.” We will then proceed to read and watch
some historical documents around the constructions of some of these
directors’ films, such as Petronius’ Satyricon, about the worshiping of
the most important female deity in late antiquity, Isis, in light of Fellini’s
Satyricon; and Thierry Jonquet’s novel Tarantula and the French-Italian
horror film, Eyes Without a Face (1960), which were both the basis for
Almodóvar’s The Skin I Live In (2011). We will be reading Karen Pinkus’
Montesi Scandal, an unrealized screenplay about the birth of the Paparazzi
in Fellini’s Rome, as well as Almodóvar’s columns from La Luna de
Madrid, written in the persona of a female prostitute. The class will also
include several guest speakers TBA.
Instructor(s): B. Wegenstein; E. Gonzalez
Area: Humanities.

AS.215.826. Spanish Independent Study.
Instructor(s): B. Seguin; E. Gonzalez; S. Castro-Klaren; W. Egginton.

Instructor(s): B. Seguin; E. Gonzalez; H. Sieber; S. Castro-Klaren; W. Egginton.

Instructor(s): B. Seguin; E. Gonzalez; H. Sieber; S. Castro-Klaren; W. Egginton.

AS.216.300. Contemporary Israeli Poetry. 3.0 Credits.
This course examines the works of major Israeli poets such as Yehuda
Amichai, Nathan Zach, Dalia Rabikovitch, Erez Biton, Roni Somek, Dan
Pagis, Yona Wollach, Yair Horwitz, Maya Bejerano, and Yitzhak Laor.
Against the background of the poetry of these famous poets we will
study recent developments and trends in Israeli poetry, including less
known figures such as Mois Benarroch, Shva Salhoov and Almog Behar.
Through close reading of the poems, the course will trace the unique style
and aesthetic of each poet, and will aim at presenting a wide picture of
contemporary Hebrew poetry.
Prerequisites: Students may receive credit for AS.216.300 or AS.300.413,
but not both.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.
AS.216.307. Reflective Mirrors: Israeli and Palestinian Cinema. 3.0 Credits.
Palestinian and Israeli cinemas have emerged side by side, each depicting its Other as a deceiving mirror of its own self. This course will analyze the different images of these Others in both cinemas.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities
Writing Intensive.

AS.216.342. The Holocaust in Israeli Society and Culture. 3.0 Credits.
This course examines the role of the Holocaust in Israeli society and culture. We will study the emergence of the discourse of the Holocaust in Israel and its development throughout the years. Through focusing on literary, artistic and cinematic responses to the Holocaust, we will analyze the impact of its memory on the nation, its politics and its self-perception.
Instructor(s): N. Stahl
Area: Humanities
Writing Intensive.

AS.216.370. Israel Through Prose. 3.0 Credits.
This course examines representations of various aspects of Israeli society and culture in contemporary Israeli prose. The course will follow both a thematic and chronological path in order to study the ways in which Israeli prose reflects political, ideological, social and cultural aspects of contemporary Israel. In this context, we will read works by several major authors such as: Agnon, Shabtai, Kahanah-Carmon, Oz, Kenaz, Yehoshua, Grossman, Castel-Bloom, Matalon, Laor, Kashua and Hoffmann. Students who sign up for section 2 will work an additional hour in Hebrew with Professor Cohen at a time mutually agreed upon by the professor and the students enrolled. - Carmon, Oz, Kenaz, Yehoshua, Grossman, Castel-Bloom, Matalon, Laor, Kashua and Hoffmann.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities
Writing Intensive.

AS.216.373. War in Israeli Arts and Culture. 3.0 Credits.
In this course we will study the various representations of what functions as one of Israel's most unifying and yet dividing forces: war. By analyzing literary and cinematic works as well as visual art and popular culture we will attempt to understand the role of war in shaping Israeli society, culture and politics. Topics such as commemoration and mourning, heroism, dissent and protest, trauma and memory and the changing image of the soldier will stand at the center of the course.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities
Writing Intensive.

AS.216.398. Zionism: Literature, Film, Thought. 3.0 Credits.
This course studies the relations between modern Hebrew and Israeli culture and Zionism. Based on a close reading of both literary and non-literary Zionist texts, we will explore the thematic, social and political aspects of the Zionist movement. The course focuses on primary sources and its main goal is to familiarize students with the various ways in which Zionism was formed and understood. In the last part of the semester we will investigate the different meanings of Post-Zionism through contemporary literary and non-literary texts as well as recent Israeli films.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.

AS.216.412. The Divine in Literature and Cinema. 3.0 Credits.
This course studies various issues concerning literary and cinematic representations of the divine. We will investigate theoretical, theological, generic and aesthetic aspects of the topic and will familiarize ourselves with the general problem of the relation between religion, literature and cinema. Among the topics to be discussed are, negative theology in literature and film, theodicy and anti-theodicy, the question of religion and literary modernism, providence and narratology in the modern novel and in contemporary cinema.
Instructor(s): N. Stahl.

AS.216.444. The Apocalypse in Literature and Film. 3.0 Credits.
"Everything which we loved is lost! We are in a desert" – this emotional assertion was the reaction to Kazimir Malevich’s 1915 painting The Black Square, as the artist himself recalled it. This sentiment of fearing, warning and even witnessing the end of the world as we know it, will stand at the center of the course. We will study the literary and cinematic representations of this apocalyptic notion and investigate its theoretical, theological, physiological and aesthetic aspects. We will seek to trace the narrative dynamics as well as literary and cinematic means of apocalyptic representations in works from various periods, languages, cultures and religions. Among the issues to be discussed: what is the apocalypse, biblical apocalypse, dystopia and nostalgia, trauma and post trauma, war and the apocalypse, the Holocaust as the end of civilization, the atomic bomb, realism and anti-realism, political changes and the apocalypse in popular culture.
Instructor(s): N. Stahl
Area: Humanities
Writing Intensive.

AS.216.500. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): N. Stahl.

AS.216.800. Independent Study.
Instructor(s): N. Stahl.

Cross Listed Courses

AS.010.204. Italian Art in the Middle Ages. 3.0 Credits.
This course explores key monuments of medieval art and architecture in Italy from c. 400 until 1350. We will concentrate on historical, functional, and aesthetical aspects that lead to the creation of single monuments and art works. Emphasis is given to the analysis of "sacred space” by means of architecture, painted, and sculptural decoration, as well as ritual performances. Another focus is laid on the emergence on the political dimension of art for the creation of civic identity as well as in the context of the late medieval courts. We raise questions about the importance of materiality and science for the creation of medieval art works.
Instructor(s): N. Zchomelidse
Area: Humanities.
AS.010.418. The Icon in East and West. 3.0 Credits.
The chronologically structured seminar discusses the conception and reception of holy images in the Middle Ages from Late Antiquity until the beginning of the Renaissance. We will investigate their creation during the rise of Christianity and their affinities with Graeco-Roman portraits and cult images. Another focus is dedicated to the theological and political context of icons during the waves of early medieval iconoclasm, in particular in Byzantium. We will address icons made in the Holy Land during the crusades, which are often characterized by merging Frankish and Byzantine styles and motifs with Islamic art. We will discuss the emergence of new icons in Italy, and their pan-European distribution after 1100. Here we will focus on the influence of the papal court and the economic impact of icons in the later Middle Ages in the Italian commune.
Instructor(s): N. Zchomelidse
Area: Humanities
Writing Intensive.

AS.010.434. Italian Art, Politics, and Religion in the time of Dante, c. 1250-1400. 3.0 Credits.
This seminar will investigate the interrelationship between art, politics, and religion on the Italian peninsula during the later Middle Ages. We will focus on the major cities as patrons of the arts (visual and poetic), e.g. Florence, Siena, Padua, Milan, Naples, Venice, and Rome, in order to understand how the elite used art to further their political and religious agendas. Select topics include: the rise of the Mendicant orders; the importance of Dante's Divine Comedy on manuscript production; artistic competition among communes; the rise of the individual artist; humanism and the arts.
Instructor(s): C. Lakey
Area: Humanities.

AS.010.707. Therapies of Art and Literature in Early Modern Europe. 3.0 Credits.
This course examines the myriad ways art and literature in Early Modern Europe addressed itself to its audiences as a form of therapy. Taking as our point of departure Petrarch's neo-Stoic therapy of the passions, the revival of consolatio literature, and the development of new Christian "wisdom" genres aimed at ethical self-cultivation, we consider how artists participated in the care of the body, the soul, and the self, innovating therapies that were at once sacramental and philosophical, spiritual and ethical. Intersections with the history of medicine will prompt us to inquire into the transposition of physiological and psychological theories, practices, and metaphors into the arena of ethical-spiritual therapy.
Instructor(s): M. Merback.

Classics
AS.040.238. Freshman Seminar: Magic and Miracles from Antiquity to the Renaissance. 3.0 Credits.
This freshman seminar will explore concepts of magic and miracles and their different forms from ancient Greece and Rome and early Christianity through the Middle Ages up to the Renaissance. Dean's Prize Teaching Fellowship Course.
Instructor(s): M. Mueller
Area: Humanities
Writing Intensive.

AS.040.601. Italian Renaissance Humanism and Modern Humanities.
This course will reflect on certain key moments in the development of Latinate and Italian Renaissance humanism and will also include reading and discussion of certain recent landmark contributions to the history of the modern humanities.
Instructor(s): C. Celenza.

AS.040.606. Topics in Classical Reception.
An exploration of recurring themes and recent trends in the reception of classical antiquity.
Instructor(s): M. Butler.

AS.040.716. Petrarch (1304-74) and the Beginnings of Renaissance Latin.
This course will provide close readings of certain Latin texts by Petrarch, with attention to his letters and to other prose works.
Instructor(s): C. Celenza.

Film and Media Studies
This course provides students an introduction to the discipline of sound studies and its relationship to three eras of historical forms of technological media. Structured around a problematic of emitter, medium, and receiver, it explores how sound was encoded by its creators as a structure of meaning in early media cultures; how it emerged as a means of aesthetic creation with the rise and dominance of the cinematic medium; and last, how it reaches the infatuated individual listener in the new era of mobile earbud audio. Theorizing our relationship to media through the study of sound and listening, we find new histories to be explored, as well as new media aesthetics to be negotiated. Through engagement with thinkers such as economist Jacques Attali, auditory and cultural historians Emily Thompson and Jonathan Sterne, film sound theorists Michel Chion and Rick Altman, and sound studies scholar Michael Bull, we construct how technologically mediated listening allows us to understand the historical and theoretical components of sound's media aesthetics. Recommended Course Background: AS.061.245 for undergraduates or JHU graduate student status (open to all JHU graduate students).
Instructor(s): M. Ward
Area: Humanities
Writing Intensive.

Anthropology
AS.070.262. Cuban Intellectuals, Cinema, and the State. 3.0 Credits.
This course examines the relationship between intellectuals and the Cuban state, focusing on how cinema and other arts have been mobilized both as propaganda and as sites for social criticism. Screenings are required for this course and will take place on Tuesdays from 7 pm to 9:30 pm. Cross-list: Film and Media Studies, PLAS, Romance Languages.
Instructor(s): L. Humphreys
Area: Humanities, Social and Behavioral Sciences.

History
AS.100.602. The French Revolution.
Introduces graduate students to the rich historiography of the French Revolution. Topics include: revolutionary origins, political culture and radicalization, citizenship, violence, family & gender, the search for stability after the Terror, global revolution, Napoleon's Brumaire coup.
Instructor(s): L. Mason
Area: Humanities, Social and Behavioral Sciences.
History of Science Technology
AS.140.674. Science and Medicine in Early Modern Atlantic World Culture.
How were changes in scientific and medical ideas reflected in cultural products of the early modern Atlantic world? We will study these ideas as they appeared in literary genres such as poetry, utopias, natural histories and travel narratives. Likewise, we will examine the visual culture of the Atlantic space for clues about changing conceptions about the natural world. Our expedition will encompass Anglophone, French and Hispanic regions, and will pay careful attention to hybrid cultural products that reflect the interaction between indigenous cultures and the (changing) European understanding of the natural world.
Instructor(s): M. Portuondo.

Medicine, Science and the Humanities
AS.145.101. Death and Dying in Art, Literature, and Philosophy: Introduction to Medical Humanities. 3.0 Credits.
This team-taught course offers an interdisciplinary introduction to the university's new concentration in "Medicine, Science, and Humanities." The themes of death, dying, and the treatment of the dead are explored in their changing historical, anthropological, philosophical, literary, art historical and medical dimensions. Open to freshmen, sophomores, and upperclass Medicine, Science, and Humanities majors.
Instructor(s): E. Ender; M. Merback; W. Stephens
Area: Humanities
Writing Intensive.

AS.145.330. Insomnia in Modern Literature, Philosophy, and Film. 3.0 Credits.
Insomnia, while being defined and treated as a sleep disorder in the field of medical discourse, has attracted other kinds of interest, too. Philosophers and writers have been intrigued by insomnia since antiquity. From their perspectives, the capability of being sleepless not only distinguishes humankind from animals but testifies to human awareness in its ceaseless striving for wisdom and truth. Insomnia appears as vigilance, an exalted state of mind well suited for philosophic reflection, intense scrutiny of the world, and sudden inspiration. Yet these moments of sustained productivity are inextricably bound to insomnia’s “dark” side, the fact that sleeplessness tortures the body and exhausts the mind, haunts the weary wakeful and makes him meditate on insomnia. Thus sleeplessness turns into an obsession with the potential to transform thinking into endless introspection, self-absorbed melancholy, if not misanthropic sarcasm. This course will examine representations of insomnia in modern philosophy, literature and film. We will analyze to what extent interpretations of sleeplessness in the humanities differ from those in medical and scientific discourse. Particular emphasis will be placed on the relationship between insomnia, subjectivity, thinking, and writing. Authors and films will be considered will include among others Emanuel Lévinas, Emil Cioran, Franz Kafka, Samuel Beckett, Ernest Hemingway, F. Scott Fitzgerald, Djuna Barnes, Gabriel García Márquez and Insomnia (2002; Christopher Nolan).
Instructor(s): A. Krauss
Area: Humanities, Social and Behavioral Sciences.

Philosophy
AS.150.483. Topics in Jewish Philosophy: Heresy. 3.0 Credits.
Hassidism is the ecstatic religious movement that emerged in East European Jewry in the mid-eighteenth century. In this research seminar we will concentrate on the teachings and activities of the circle of Dov Ber of Mezrich between 1760 and 1772. We will study both internal and external sources (such as Salomon Maimon's report in his Lebensgeschichte). All materials will be available in English translation, though reading knowledge of Hebrew would be an asset.
Instructor(s): Y. Melamed.

Political Science
AS.191.344. Belonging to Nature in the Anthropocene. 3.0 Credits.
This course explores debates in contemporary environmental political thought concerning humanity's relationship to nature in the Anthropocene. The Anthropocene refers to the era in which "human" activity becomes a force of "nature"—when the impact of human activity on natural processes manifests itself in the stuff of the Earth. For many of us, these planetary transformations are hardly noticeable in day-to-day life, but they are dramatic: we are living through the Earth's sixth mass extinction. What is our relationship to these transformations? Do we have the power to stop them, or at least to minimize their harmful effects? Course readings and films introduce multiple visions of the human/nature relationship and examine the responses they recommend to these and other questions. The political stakes of these visions are brought to light as we consider: How do visions of the human/nature relationship shape and texture core political concepts like freedom, agency, responsibility, and progress? What do they suggest about the strategies most likely to motivate action amid the uncertainty of the Anthropocene? How do these visions subtly (and not so subtly) relegate some to the realm of "nature" so that others can be classified as "human"?
Instructor(s): S. Erev
Area: Humanities
Writing Intensive.

Humanities Center
AS.300.115. Introduction to Romantic Poetry. 3.0 Credits.
This course offers an introduction to romantic poetry through a comparative approach to three of the movement's key authors: Friedrich Hölderlin, John Keats, and Giacomo Leopardi. We will work through their main writings in detail along with considerations of their cultural contexts and theoretical and critical approaches to romanticism more broadly.
Instructor(s): L. Lisi
Area: Humanities.

AS.300.219. A History of Outer Space. 3.0 Credits.
Where did Outer Space come from? This course explores the history of Outer Space from the 18th century to today. In particular, it examines Outer Space as a place constructed by the interaction of political, militaristic, cultural, and scientific discourses. We will examine a wide variety of materials, from Star Trek to The X-Files to War of the Worlds in our quest to construct a history of the Final Frontier. There will be a field trip to the National Air and Space Museum.
Instructor(s): B. Stein
Area: Humanities
Writing Intensive.
AS.300.337. The Tragic Tradition. 3.0 Credits.
This course offers a broad survey of tragic drama in the Western tradition, from its origins in ancient Greece to the twentieth century. In weekly lectures and discussion sections, we will study the specific literary features and historical contexts of a range of different works, and trace the continuities and transformations that shape them into a unified tradition. Key questions and themes throughout the semester will include what counts as tragic, the tragedy of social and political conflict, the bearing of tragedy on the meaning and value of life, the antagonistic relation between world and humans, the promises and dangers of tragedy for contemporary culture. Authors to be studied: Sophocles, Euripides, Seneca, Shakespeare, Racine, Goethe, Ibsen, Strindberg, Chekov, Brecht, Pirandello, and Beckett.
Instructor(s): L. Lisi
Area: Humanities.

AS.300.349. Capitalism and Tragedy: from the 18th Century to Climate Change. 3.0 Credits.
In contemporary discussions of climate change, it is an increasingly prevalent view that capitalism will lead to the destruction of civilization as we know it. The notion that capitalism is hostile to what makes human life worth living, however, is one that stretches back at least to the early eighteenth century. In this class, we will examine key moments in the history of this idea in works of literature, philosophy, and politics, from the birth of bourgeois tragedy in the 1720s, through topics such as imperialism and economic exploitation, to the prospects of our ecological future today. Authors to be studied: George Lillo, Balzac, Dickens, Marx and Engels, Ibsen, Weber, Brecht, Arthur Miller, Steinbeck, Pope Francis, and contemporary fiction, politics and philosophy on climate change.
Instructor(s): L. Lisi
Area: Humanities.

Humanities Center
AS.300.389. Freud’s Cases - Source of Psychoanalytic Knowledge. 3.0 Credits.
Even though major scientific discoveries have been made from the intensive study of singular cases, modern science is mostly quantitative in its approach. In this course we will follow psychoanalysis’ use of clinical practice as the primary context for the generation of knowledge. We will use two notions from the philosophy of science: “exemplars” (Kuhn) and “personal knowledge” (Polanyi), as we read Freud’s cases in which he combines theoretical consideration and detailed investment in the singularity of the person. In his accounts of the “hysteria” of Dora, the “phobia” of Little Hans, the “obsession” of the Rat Man, the “infantile neurosis” of the Wolf Man and Schreber’s “paranoia,” Freud not only generated theoretical and technical knowledge but also constituted the “single case study” genre of investigation, as the primary source of psychoanalytic knowledge. Readings will include: Freud, Foucault, Polanyi, Kuhn, Hacking, and Forrester. Cross-listed with Film and Media Studies
Instructor(s): O. Ophir
Area: Humanities.

AS.300.419. 1966 before and after. French theory. 3.0 Credits.
The “Languages of Criticism” conference held at Hopkins marked a watershed moment in the history of literary studies and redefined, for many scholars and intellectuals, the nature of humanistic inquiries. This course involves the close study of key texts that, from the postwar years into 1970s (from Bachelard, Fouquet, and Starobinski to Lacan, Barthes, and Derrida), are landmarks in this changing critical and philosophical landscape. Knowledge of French is desirable but not required.
Instructor(s): E. Ender
Area: Humanities.

AS.300.427. Reading Freud. 3.0 Credits.
Sigmund Freud was one of the most influential thinkers of the 20th century. Psychoanalysis, which was his theory of mind, a research method, and a therapeutic technique, offered concepts that pervade Western culture and the humanities. In this seminar which is designed for students from all fields of knowledge, we will closely and chronologically read Freud’s major works, follow his developing theories, and become familiar with psychoanalytic concepts such as the unconscious, the uncanny, instincts, sexuality and aggression, which illuminated mysteries in other fields, from literature to anthropology, from political science to religious studies, and from philosophy to the arts.
Instructor(s): O. Ophir
Area: Humanities.

Interdepartmental
AS.360.133. Freshman Seminar: Great Books at Hopkins. 3.0 Credits.
Freshman Seminar: Students attend lectures by an interdepartmental group of Hopkins faculty and meet for discussion in smaller seminar groups; each of these seminars is led by one of the course faculty. In lectures, panels, multimedia presentations, and curatorial sessions among the University’s rare book holdings, we will explore some of the greatest works of the literary and philosophical traditions in Europe and the Americas. Close reading and intensive writing instruction are hallmarks of this course; authors for Fall 2018 include Homer, Boethius, Machiavelli, Shakespeare, Descartes, Aphra Behn, Mary Shelley, Mozart, Douglass, and Woolf.
Instructor(s): E. Patton; E. Refini; S. Weiss; W. Egginton
Area: Humanities
Writing Intensive.

Program in Latin American Studies
AS.361.130. Introduction to Latin American Studies. 3.0 Credits.
The goal of this course is to provide an overview of Latin America, analyzing political and cultural aspects, chronologically organized. We will begin studying the origins of the multi-ethnic societies, starting with the ancient civilizations and their transformation under colonization. It is important to understand the survival of cultural traits among indigenous peasants today in the countries that were the cradle of ancient civilizations: Mexico, Guatemala and the Andean countries. In the republican era the course will focus on the classical Caribbean dictators in the first half of the 20th century and their reflection in the literature, comparing the historical reality with the magic representation in the work of Garcia Marquez. The course will scrutinize the most important revolutions in the continent: the Mexican, Cuban and Bolivian revolutions and the geopolitics of USA in the Americas. Weekly lectures related to the assigned reading will focus on specific periods, topics and regions. After each lecture, we will review the material, connecting specific details from the readings with the more theoretical aspects provided in my lecture. The course has a website where the PowerPoint presentations will be posted. Students are encouraged to post their questions, comments and suggestions on the web after their readings. Students will be given a study guide for each lecture, which will be the basis for the exams. Our perspective on Latin America will be enhanced by a selection of few films related to the topics.
Instructor(s): E. Cervone
Area: Humanities, Social and Behavioral Sciences.
Study of Women, Gender, Sexuality
AS.363.341. The Making of Modern Gender. 3.0 Credits.
Gender as we know it is not timeless. Today, gender roles and the assumption that there are only two genders are contested and debated. With the binary gender system thus perhaps nearing its end, we might wonder if it had a beginning. In fact, the idea that there are two sexes and that they not only assume different roles in society but also exhibit different character traits, has emerged historically around 1800. Early German Romanticism played a seminal role in the making of modern gender and sexuality. For the first time, woman was considered not a lesser version of man, but a different being with a value of her own. The idea of gender complementation emerged, and this idea, in turn, put more pressure than ever on heterosexuality. In this course, we will trace the history of anatomy and explore the role of literature and the other arts in the making and unmaking of gender.
Instructor(s): K. Pahl
Area: Humanities.

Music
AS.376.305. Operatic Technologies. 3.0 Credits.
Operatic Technologies offers an introduction to opera via a series of case studies about the materials used to produce it. With a particular focus on the Italian case, we will trace issues such as how auditoriums have historically been illuminated; orchestras directed; machines used to create and sustain illusion and operas simulcast. Students will leave this course with a clear sense of how the look and feel of the operatic experience has changed over time; how technological practices established in the past continue to determine productions now, and how the cinema can be considered an extension of opera. Our course includes a visit to the cinema to see a Metropolitan Opera simulcast. Ability to read music is not required.
Instructor(s): L. Protano Biggs
Area: Humanities
Writing Intensive.

Center for Language Education
AS.384.115. First Year Hebrew. 4.0 Credits.
Designed to provide reading and writing mastery, to provide a foundation in Hebrew grammar and to provide basic conversational skills. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students' schedules.
Instructor(s): Z. Cohen.

AS.384.116. First Year Hebrew II. 3.0 Credits.
Designed to provide reading and writing mastery, to provide a foundation in Hebrew grammar and to provide basic conversational skills. Cross-listed with Jewish Studies.
Prerequisites: AS.384.115
Instructor(s): Z. Cohen.

AS.384.215. Second Year Hebrew. 3.5 Credits.
Designed to enrich vocabulary and provide intensive grammatical review, and enhance fluency in reading, writing and comprehension. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students' schedules.
Prerequisites: AS.384.116 or equivalent.
Instructor(s): Z. Cohen
Area: Humanities.

AS.384.216. Second Year Hebrew II. 3.0 Credits.
Designed to enrich vocabulary and provide intensive grammatical review, and enhance fluency in reading, writing and comprehension. Recommended Course Background: AS.384.215 or permission required.
Prerequisites: AS.384.215
Instructor(s): Z. Cohen
Area: Humanities.

AS.384.315. Third Year Hebrew. 4.0 Credits.
Designed to maximize comprehension and the spoken language through literary and newspaper excerpts providing the student with the language of an educated Israeli. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students' schedules.
Prerequisites: AS.384.216 or equivalent.
Instructor(s): Z. Cohen
Area: Humanities.

AS.384.316. Third Year Hebrew II. 3.0 Credits.
Designed to: maximize comprehension and the spoken language through literary and newspaper excerpts providing the student with the language of an educated Israeli. Recommended Course Background: AS.384.315 or permission required. Cross-listed with Jewish Studies.
Prerequisites: AS.384.316 or instructor permission
Instructor(s): Z. Cohen
Area: Humanities.

Program in Museums and Society
In 1857 Baltimore's historic George Peabody Library was born, one of America's first public libraries. This course studies its history, rare book collections, and foundational role in Baltimore's cultural history.
Instructor(s): E. Havens
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.353. Revolutions of the Book: Material Culture & the Transformation of Knowledge from Antiquity to the Renaissance. 3.0 Credits.
Explores the material culture of knowledge through transformations in the technologies and arts of communication, taught entirely from rare books, manuscripts, and artifacts in JHU libraries and museum collections.
Instructor(s): E. Havens
Area: Humanities
Writing Intensive.

AS.389.356. Halls of Wonder: Art, Science, and Literature in the Age of the Marvelous, 1500-1800. 3.0 Credits.
Explore the material culture of "wonder" from the Renaissance to the Enlightenment in literature, science, and art, with Hopkins' rare book collections and the Walters Art Museum. M&S practicum course. Cross-listed with GRLL, History, and History of Art.
Instructor(s): E. Havens
Area: Humanities.

History
http://history.jhu.edu/

The Department of History offers students the opportunity to work intensively in the classroom and with individual faculty to discover the richness and complexity of history. Undergraduates begin with general courses, but progress quickly to courses that explore topics in depth
and provide experience in researching, analyzing, and writing about the past. Graduate students work independently and with faculty advisors on reading and research in their fields of interest, while departmental seminars bring them together to discuss their research, forging a collegial intellectual culture. The department emphasizes European history, United States history, and the histories of Africa, Latin America, and China. Faculty and students participate in a variety of interdisciplinary programs, including Africana Studies, East Asian Studies, Latin American Studies, Judaic Studies, Museums and Society, the Program for the Study of Women, Gender & Sexuality, and International Studies.

Facilities
In addition to the Milton S. Eisenhower Library at the university, students in the Department of History can use the collections of the Peabody Institute Library, the Enoch Pratt Free Library, and the Maryland Historical Society in Baltimore, and of the Library of Congress, the National Archives, the Folger Shakespeare Library, and other specialized libraries in nearby Washington, D.C. There is provision for regular transportation to and from the Library of Congress. Also within easy distance are the holdings of specialized historical libraries and archives in Annapolis, Richmond, Williamsburg, Charlottesville, Wilmington, Harrisburg, Philadelphia, Trenton, Princeton, Newark, and New York.

Undergraduate Programs
Requirements for the B.A. Degree
(Also see Requirements for a Bachelor's Degree. (p. 7))

The Krieger School classifies history as both a social scientific and humanistic discipline. This accords very well with the wide range of explanatory and interpretive approaches to the past that now prevail in the discipline of history. One of the history program's goals is to introduce students to these varied approaches. Although the department offers strong preparation for students who seek to specialize in a particular cultural or geographic region, history at Johns Hopkins is primarily issue and topic oriented. It also puts a premium on developing the capacity to reason comparatively and on deepening the student’s understanding of global connections among cultures in the past and in contemporary life.

The department offers undergraduate courses that range from large introductory classes to small, focused seminars that encourage intensive interaction with individual professors and with other students. Beyond the introductory level, most of our courses are writing intensive and promote in all students critical reading skills and the ability to formulate effective written arguments. Through its core curriculum, the major also cultivates skills specific to the historian, especially research and writing based upon the systematic analysis of primary documents.

The program’s overall aim is to deepen the critical habits of mind that arise from the study of time and change. These capacities are the hallmarks of liberal learning, but they are also the foundation for success in post-graduate studies and careers of many kinds, including business, law, and public affairs.

Major in History
• Students must earn a “C-” or higher grade in all courses used to satisfy major requirements, and may not count courses that are graded as satisfactory/unsatisfactory.

• For students who choose to focus on one geographical area (Europe, United States, Latin America, Africa, Asia), two courses must be taken outside the student’s area of focus.

• Except for courses used to satisfy the foreign language proficiency requirement, no more than four courses offered outside the History department (AS.100.xxx) may be used to satisfy major requirements (e.g.: cross-listed, transfer, and study abroad courses). No more than two of these four courses may be offered outside the Krieger School of Arts and Sciences (usually summer transfer credit and/or study abroad courses).

MAJOR REQUIREMENTS
Introductory Courses (select one option):   6
Two introductory history courses (AS.100.1xx)

-or-
One introductory history course (AS.100.1xx) + one "Freshman Seminar" (AS.100.200-229)

Method Requirement (All Majors)
AS.100.193  Undergraduate Seminar In History  3
AS.100.194  Undergraduate Seminar In History  3

Elective Courses
Two history courses at any level  6
Four 300-level or higher history courses  12

Additional Upper-Level Courses (select one option):
Two 300-level or higher history courses  6

-or-
AS.100.507  Senior Thesis  2  3
AS.100.508  Senior Thesis  2  3

Foreign Language Requirement
Foreign language proficiency through the intermediate level  0-18
Total Credits  42-60

1  Foreign language proficiency may be demonstrated by coursework or by special examination, but a language requirement waived by exam must be documented on the student’s transcript.

2  Students must have a cumulative GPA of 3.25 and a cumulative GPA in history of 3.5 or higher by December of their junior year to be eligible for the senior thesis option to graduate with honors in history.

Cognate Courses The History Department encourages interdisciplinary work in cognate fields of learning. History minors are therefore strongly advised to take additional courses in any department, including the History Department, that relate to the student’s major discipline in a historical way.

Sample Program of Study for History Majors
A sample path toward degree completion might include the following sequence of courses. Many alternative paths will also work. Please consult with your department advisor regarding alternative paths.

Freshman
Fall
Course  Credits Spring
Course  Credits
AS.100.1xx "Introductory"  3  AS.100.1xx "Introductory"  3
-or- AS.100.2xx "Freshman Seminar*  3
Introductory Language Course  3

6 6
Senior Honors Option: Sample Program of Study

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.100.507 Senior Thesis</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AS.100.494 Senior Honors Seminar</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AS.100.xxx History Elective</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 11

Honors Program in History (BA)

The history department strongly encourages all eligible history majors to pursue the honors track in history. The track culminates in the senior thesis, a yearlong, "capstone" research project completed under the direct supervision of an individual faculty advisor. Like all capstone projects, the senior thesis is intellectually challenging and its completion almost always brings with it a tremendous sense of accomplishment. It also hones the talented young historian’s capacity to sustain a cogent argument based on primary evidence in the long form essay. These skills and the completion of a sustained independent project are also important practical assets when seeking a job or a post-graduate education.

A general cumulative GPA of 3.25 and a cumulative GPA in history of 3.5 are prerequisites for undertaking the senior thesis, and to obtain honors students will normally be expected to complete the thesis with a grade of A- or better. All thesis writers must also enroll in both the AS.100.507 Senior Thesis (fall, 3 credits) and AS.100.508 Senior Thesis (spring, 3 credits) and AS.100.494 Senior Honors Seminar (fall, 1 credit) and AS.100.495 Senior Honors Seminar (spring, 1 credit) - enrollment is by instructor’s permission and will be granted only to students who have obtained a commitment from a faculty thesis advisor. This commitment should normally be obtained no later than April 30th of the junior year.

For questions about the honors track in history or finding a thesis advisor, consult your departmental advisor or the current Director of Undergraduate Studies.

Minor in History

The minor in history offers to students majoring in other programs of study an opportunity to pursue a serious interest in history.

- Students must earn a "C-" or higher grade in all courses used to satisfy minor requirements and may not be taken satisfactory/unsatisfactory.
- No more than one course offered outside the History department (AS.100.xxx) may be used to satisfy minor requirements (e.g.: cross-listed, transfer, and study abroad courses).

MINOR REQUIREMENTS

Introductory Courses (select one option): 6
- Two introductory history courses (AS.100.1xx)
  -or-
  One introductory history course (AS.100.1xx) + one "Freshman Seminar" (AS.100.200-229)

Elective Courses
- One 200-level or higher history course 3
- Three 300-level or higher history courses 9

Total Credits: 18

Cognate Courses The History Department encourages interdisciplinary work in cognate fields of learning. History minors are therefore strongly advised to take additional courses in any department, including the History Department, that relate to the student’s major discipline in a historical way.

B.A.- M.A. Programs in History

The department offers two B.A.– M.A options for current Hopkins undergraduate students. Details can be found on the Graduate tab.

Graduate Programs

The graduate program prepares professionally motivated students for careers as research scholars and college and university teachers. Hence it is designed for candidates who want to proceed directly to the Ph.D. degree, who have developed historical interests, and who are prepared to work independently. Within the areas of European history, American history, and the histories of Africa, Latin America, and China, the department emphasizes social/economic and intellectual/cultural history. Although diplomatic and political history are not emphasized, attention is given to the social, economic, and cultural bases of politics.

The program is organized around seminars rather than courses, credits, or grades. AS.100.781 The Seminar-AS.100.782 The Seminar and satellite seminars in European, American, and Comparative World History bring together students, faculty, and invited scholars from outside the university to discuss their research work. These departmental seminars
create a lively intellectual community in which graduate students quickly become contributing members. The combination of flexibility, independence, and scholarly collegiality offered by the Hopkins program gives it a distinctive character.

Students select four fields (one major and three minor) and make their own arrangements with professors for a study program leading to comprehensive examinations at the end of the second year. Those arrangements may include taking a seminar in the field. One, and exceptionally two, minor field may be taken outside the Department of History. Students have maximum flexibility in the construction of individual plans of study, as well as the opportunity to work closely with several professors.

Admission and Financial Aid
In judging applications, the department puts particularly heavy emphasis on the quality of the student's historical interests and prior research experience. Each applicant must submit a sample of written work. Applicants must also take the general aptitude portions of the Graduate Record Examination. Ordinarily no candidate for admission is accepted whose record does not indicate an ability to read at least one foreign language.

The department accepts only those students who plan to work in the specific fields of the faculty, and each student is admitted only with the approval of a particular professor. Applicants should indicate the proposed field of specialization at the time of application. With the concurrence of a new faculty advisor, students may, of course, later change their major professor.

The department normally provides full fellowship support for all admitted students including both tuition and a stipend. Students are encouraged to apply for external support if eligible.

Four-year B.A. – M.A. Program in History
The B.A. – M.A Program is an accelerated program that allows the undergraduate to complete a BA and an MA in history in four years. It is designed for students who demonstrate exceptional scholarly ability and assumes that the student will complete most other requirements for graduation by the end of the junior year. Minimum prerequisites for admission include a GPA of 3.8 or higher, completion of language requirements through the intermediate level by the end of the junior year, and the securing of a faculty sponsor in the department of History. Students have maximum flexibility in the construction of individual plans of study, as well as the opportunity to work closely with several professors.

Five-year Barcelona B.A.- M.A. Program
Hopkins Barcelona
5-year BA/MA in World History Program
This program provides a select group of undergraduates the opportunity to pursue an integrated, consecutive 5-year dual-degree BA/MA between JHU and Universitat Pompeu Fabra (UPF) in Barcelona that will lead to the MA in world history from UPF. JHU students will spend either the fall or spring of their junior year at UPF, earning credits toward their UPF MA requirements. They will receive their Hopkins BA at the end of four years, and then pursue the UPF MA degree in their fifth year of study.

Further information is available through the Office of Study Abroad.

Requirements for the Ph.D. Degree
Students are required to have a reading knowledge of those foreign languages that are necessary for the satisfactory completion of their program of graduate study. Students in European history must have a reading knowledge of at least two languages, and students in medieval history must also have a reading knowledge of Latin. Students of Chinese history are expected to have reading knowledge of modern and classical Chinese and in most cases should also have reading knowledge of Japanese and/or a European language. Students in the Latin American area must have a reading knowledge of two of the following, depending upon their particular specialties: French, Spanish, Portuguese, or Dutch. In African history, students must have a reading knowledge of three languages including English and French. Depending upon their fields of specialization, students in African history may have other language needs. Students are expected to pass a written examination in one language within a month after entering the department, and they are required to do so before the end of the first year.

Each student is required to take a seminar under his/her major professor and to participate in at least one departmental seminar each semester.

The student's knowledge of four fields will be tested by written and oral examinations before the end of the second year of graduate study.

The student must write and defend a dissertation that is a major piece of historical research and interpretation based on primary sources and representing a contribution to historical knowledge. Its content, form, and style must be adequate to make it suitable for publication.

Normally, each student is required to perform some supervised teaching or research duties at some point during the graduate program, most often as a teaching fellow during the second and fourth years.

M.A. Degree
The master of arts degree is automatically awarded to each doctoral candidate following the passing of field examinations and the completion of the language requirements. In special circumstances, a student may be permitted to take an M.A. degree after one full year of graduate study. In such cases students will be required to demonstrate by examination an ability to read at least one foreign language, write a satisfactory research essay, and satisfy the director of their research that they have a mastery of the field of history that forms its background. The essay must be submitted to the Graduate Board.

For current faculty and contact information go to http://history.jhu.edu/people/
Faculty

Chair
Michael A. Kwass
Department Chair: Early Modern France, French Revolution, French Atlantic, and globalization.

Professors
Jeffrey Brooks
Russian and Soviet history, with an emphasis on culture and society, the press, and popular culture.

Toby L. Ditz
Early American, Atlantic World, cultural history, and the history of women and gender.

Francois Furstemberg
United States, c. 18th and 19th centuries, and the French Atlantic.

Peter Jelavich
Cultural and intellectual history of Europe since the Enlightenment, with emphasis on Germany, popular culture, mass culture, and the media, and modern social and cultural theory.

Martha S. Jones
Society of Black Alumni Presidential Professor and Professor of History: Race and rights in the 19th century U.S. with an emphasis on slavery, law, gender, and visual culture.

Michael A. Kwass
Department Chair: Early Modern France, French Revolution, French Atlantic, and globalization.

Pier M. Larson
African history with specialization in East Africa, Madagascar, the Indian Ocean, and the history of slavery and the slave trade in the Atlantic world.

John Marshall
Leonard and Helen R. Stulman Professor of History: Early Modern British and Early Modern British Imperial History, Early Modern European Cultural and Intellectual History, and the History of Political Thought.

Tobie Meyer-Fong
East Asia, especially social and cultural history of China since 1600.

Philip D. Morgan
Harry C. Black Professor: Early Modern colonial British America and slavery.

Gabriel Paquette
Imperial, International and Intellectual History (Europe, Latin America).

William T. Rowe
John and Diane Cooke Professor of Chinese History: Modern East Asia, especially socioeconomic, and urban history.

Todd Shepard
Arthur O. Lovejoy Professor: Modern France and French empire, decolonization, and gender and sexuality.

Gabrielle Spiegel
Krieger-Eisenhower Professor: Medieval history, with special interest in historiography and linguistic analysis.

Ronald G. Walters
Social and cultural history of the United States with special interest in radicalism, reform, race, and popular culture.

Associate Professors
Angus Burgin
Director of Graduate Studies: 20th-century United States, political history, intellectual history, and the history of capitalism.

Nathan Connolly
Herbert Baxter Adams Associate Professor of History: Twentieth-century America, racism, capitalism, urban and suburban history, and African diaspora.

Pawel Maciejko
Early modern history, Jewish history, intellectual history, and East-Central Europe.

Kenneth Moss
Felix Posen Chair in Modern Jewish History: Modern Jewish history, history of Israel, Russia, Poland, and Eastern Europe, Jewish political thought, Hebrew and Yiddish literature and culture, history and sociology of nationalism, theory and practice of cultural history, and the history of the cultural sphere.

Erin Rowe
Director of Undergraduate Studies: Early modern Spain, the Mediterranean, saints and sanctity, and women and gender.

Assistant Professors
Tamer el-Leithy
Social/cultural history of the medieval Middle East and Mediterranean, and history of religious difference.

Katie Hindmarch-Watson
Modern Britain and the British Empire, urban space, gender and sexuality, and labor and technology.

Jessica Marie Johnson
Women, gender, and sexuality in the African diaspora, histories of slavery and the slave trade, and digital history and new media.

Hayang "Yumi" Kim
19th- and 20th-century Japan and Korea, medicine and religion, folk culture, colonialism, and the history of women and gender.

Casey Lurtz
Modern Mexico and Latin America more broadly, rural and agricultural history, commodities, history of development, economic history, and Atlantic history.

Elizabeth Thornberry
History of gender, sexuality, empire, and law in Southern Africa and across the continent.

Senior Lecturers
Laura Mason
French Revolution, democracy and violence, cultural history and media, history and film, and French film.

Visiting Professors
Jean Hébrard

Professors Emeriti
Sara S. Berry
Robert Forster
Louis Galambos
Richard Goldthwaite
Jack P. Greene
Andrew W. Mellon Professor of the Humanities Emeritus.
Jane Guyer
Michael Johnson
Richard L. Kagan
Franklin W. Knight
Leonard and Helen R. Stulman Professor of History.
Ruth Leys
Vernon Lidtke
John G. A. Pocock
Harry C. Black Professor Emeritus.
Orest Ranum
Willie Lee Rose
Dorothy Ross
Arthur O. Lovejoy Professor Emerita.
Mary Ryan
Nancy Struver
Mack Walker
Judith Walkowitz

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

**AS.100.102. The Medieval World. 3.0 Credits.**
This course will explore selected topics in the political, economic, social, and intellectual history of Western Europe in the period between the fall of the Roman Empire and the thirteenth century. Special emphasis will be given to understanding the ways in which medieval society functioned as a pioneer civilization, compelled to reorganize itself after the almost total collapse of the ancient world, and to the interplay between material and cultural forces in the processes of social organization.
Instructor(s): G. Spiegel
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.100.103. Early Modern Europe & the Wider World. 3.0 Credits.**
This course surveys the history of Europe and its interactions with Africa, the Americas, and Asia during the early modern period (c. 1400-1800). Topics include: the Renaissance, the Reformation, International Relations and Warfare, Colonialism, the Enlightenment, and the Age of Revolutions.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences.

**AS.100.104. Modern Europe and the Wider World. 3.0 Credits.**
European history since the French Revolution. Topics include: revolutions and democratization, industrialization, nationalism, imperialism, two World Wars, fascism, decolonization, Soviet communism, and formation of the European Union.
Instructor(s): P. Jelavich
Area: Humanities, Social and Behavioral Sciences.

**AS.100.108. Making America: Black Freedom Struggles to 1896. 3.0 Credits.**
From slave revolts on the West African coast to national conventions and civil war, people of African descent have defined freedom and struggle in terms of kinship, diasporic connection, and fighting antiblack violence. This course explores the arc of that history and its role in the making of America.
Instructor(s): J. Johnson
Area: Humanities, Social and Behavioral Sciences.

**AS.100.109. Making America: Slavery, Violence, and the Coming of the Civil War. 3.0 Credits.**
An examination of violence - primarily racial and political - in the decades between the American Revolution and Civil War (1789 to 1861).
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.100.110. Making America: Politics and Society since the Great Depression. 3.0 Credits.**
This course explores the interplay between economic growth and instability, diversity and conformity, war and protest, and liberalism and conservatism in modern American politics and society. Previously offered as AS.100.182, "The United States since 1929."
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences.

**AS.100.112. Making America: Mastery & Freedom, 1609-1789. 3.0 Credits.**
Early America from the arrival of Europeans to the US constitution. Covers transatlantic empires and their rivalries; formation of Anglo-American settler societies based on slavery and patriarchal households; conflict with Native Americans; the revolutionary era and its tensions between republican principles of freedom and independence and persisting, even deepening, gender and racial inequalities.
Instructor(s): T. Ditz
Area: Humanities, Social and Behavioral Sciences.

**AS.100.113. Making America: Race, Radicalism, and Reform. 3.0 Credits.**
Beginning with the end of Reconstruction and continuing through the present day, this course will examine the complicated ways in which Americans attempted to come to terms with racial, ethnic, cultural, and other forms of diversity.
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences.

**AS.100.114. Making America: U.S. History in the Age of Atlantic Revolution. 3.0 Credits.**
Transnational approaches to U.S. history, c. 1760-1830, with a particular emphasis on the impact of the French and Haitian Revolutions.
Instructor(s): F. Furstenberg
Area: Humanities, Social and Behavioral Sciences.
AS.100.115. Modern Latin America. 3.0 Credits.
Survey of Latin American history from Independence to the present. The course will look at the meaning of nations and citizenship through the lenses of international relations, development, and identity.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences.

AS.100.117. History of Brazil. 3.0 Credits.
Instructor(s): G. Paquette
Area: Humanities.

AS.100.122. Introduction to History of Africa (since 1880). 3.0 Credits.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.123. Introduction to African History: Diversity, Mobility, Innovation. 3.0 Credits.
An introduction to African history with emphasis on diversity, mobility, and innovation. Considers both early and modern times.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.129. Introduction to Modern Jewish History. 3.0 Credits.
Jewish history 1750-present in Europe, the Near East, the US, Israel; the challenges of modernity and new forms of Jewish life and conflict from Enlightenment and emancipation, Hasidism, Reform and Orthodox Judaism to capitalism and socialism; empire, nationalism and Zionism; the Holocaust. Extensive attention to US Jewry and State of Israel.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.154. Modern Mexico from the Alamo to El Chapo. 3.0 Credits.
In this course we will use popular depictions of Mexico’s heroes and villains, tragedies and triumphs to delve into both the nation’s history and the importance of thinking historically.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences.

AS.100.163. Online: Modern European History Through Film, 1789 to 1991. 3.0 Credits.
This course examines the history of Western Europe from the French Revolution through to the end of the Cold War. It examines such themes as revolutions and democratization, the origins of egalitarianism, the spread of secularism, the post-war reshaping and modernization of Western culture and political policies (European and otherwise), Europe’s role in the fall of the Ottoman Empire, and decolonization. Films depicting key periods and events will be used to complement readings.
Instructor(s): S. Stewart
Area: Humanities, Social and Behavioral Sciences.

AS.100.193. Undergraduate Seminar in History. 3.0 Credits.
The first semester of the two-semester sequence required for majors, this course introduces students to the theory and practice of history. Following a survey of approaches to the study of the past and an introduction to research methods, students undertake original research and write an extended essay. Intended for history majors and prospective majors.
Instructor(s): F. Furstenberg; L. Mason
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.194. Undergraduate Seminar in History. 3.0 Credits.
The second semester of the two-semester sequence required for majors, this course further introduces students to the theory and practice of history. Students write an essay based on original research.
Prerequisites: AS.100.193
Instructor(s): K. Hindmarch-Watson; W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.201. Freshman Seminar: Prostitution in a Global Perspective, 1750-2012. 3.0 Credits.
This course examines topics such as the ‘medical model’ of prostitution regulation, the rise of international anti-prostitution, and the responses of modern nationalists to sex work in a global context.
Instructor(s): S. Stewart
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.202. Conflict and Co-Existence: The Early Modern Mediterranean. 3.0 Credits.
This course explores the dynamic and fluid world of the early modern Mediterranean (1453-1650), where Christians, Jews, and Muslims met, fought, traded with, and enslaved each other.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.203. Freshman Seminar: From Columbus to Calypso: The Caribbean and the Wider World. 3.0 Credits.
This course examines the history of the Caribbean and how five hundred years of colonization, slavery, piracy, rebellion, and revolution have shaped the politics and culture of the islands today.
Instructor(s): L. MacDonald
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.204. Freshman Seminar: Abraham Lincoln and his America. 3.0 Credits.
Freshman seminar that explores the life and times of Abraham Lincoln through contemporary sources and texts by historians.
Instructor(s): M. Johnson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.205. Freshman Seminar: Health, Healing, and Medicine in Africa. 3.0 Credits.
A freshman seminar introducing students to the history of health, healing, and forms of medical practice in Africa over the last two centuries.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.206. Freshman Seminar: Law, Society, and Power in America, 1500-1877. 3.0 Credits.
This course examines the relationship between law, governance, and social structures in America between the start of European settlement and the era of the Civil War. Topics will include Native American and European land claims, the regulation of family life, economic and commercial disputes, and the legal regimes of race and slavery. Throughout, we will consider both the aims of governing officials and how ordinary men and women maneuvered within the legal system. Freshman only.
Instructor(s): S. Damiano
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.207. Freshman Seminar: Americans in Paris, 1787-1971. 3.0 Credits.
This freshman seminar focuses on the often life-changing experiences of American travelers and expatriates in Paris as a way of thinking about travel and what gives cities particular identities.
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.209. Fresh Sem:Mexico and the World from Cortés to Cartels. 3.0 Credits.
This introductory course examines Mexico’s political, economic, and cultural role in global history from the time of Spanish conquest until the twenty-first century.
Instructor(s): J. Clark
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.210. Freshman Seminar: Real Pirates of the Caribbean. 3.0 Credits.
This freshman seminar explores the rise of economic crimes, including piracy, smuggling, and counterfeiting, in the 17th- and 18th-century British North America and Caribbean, and their portrayal in popular culture. Freshmen Only.
Instructor(s): K. Smoak
Area: Humanities, Social and Behavioral Sciences.

AS.100.211. Freshman Seminar: American Slavery. 3.0 Credits.
This seminar explores the history of American slavery, tracing developments over time and across space, probing the impact of this iniquitous and dynamic institution on societies and individuals, and examining a variety of sources that historians use to construct their narratives. Freshman only
Instructor(s): P. Morgan
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.212. Freshman Seminar: Jews in the Medieval Mediterranean: The Politics of Conquest under Crescent and Cross. 3.0 Credits.
How can Jewish history help us understand the politics of Islamic and Christian states in Sicily, Spain, and Palestine in the age of Crusade and holy war? Freshman only
Instructor(s): B. Goldman
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.213. Freshman Seminar: History of Gender and the Family in the United States. 3.0 Credits.
For Freshman Only. Discussion style. Introduces major themes since 1700: family sentiment and authority relations; gender and sexuality; family and work; dynamics of family and race. Readings emphasize interdisciplinary perspectives and interpretation of primary sources.
Instructor(s): T. Ditz
Area: Humanities, Social and Behavioral Sciences.

AS.100.214. Freshman Seminar: Russia and the West. 3.0 Credits.
Students will consider Russian political culture and the Russian cultural tradition from Pushkin to Putin.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.215. Freshman Seminar: US-USSR Cold War. 3.0 Credits.
Focus on Stalin, Khrushchev/Truman Ike period but includes Brezhnev. 2 sides of cold war, write 6-7 journals of 300 wds, 2 papers of 1200 words, 2 quizzes, no midterm or final.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.217. Freshman Seminar: Cities and Modern Life in Victorian Britain. 3.0 Credits.
Victorian Cities focuses on the politics of everyday life, space, consumption, and concepts of the self in Britain's major urban centers, including London, Manchester, and Dublin, from 1830 to 1914.
Instructor(s): K. Hindmarch-Watson
Area: Humanities, Social and Behavioral Sciences.

AS.100.218. Freshman Seminar: Russian History from Revolution to Cold War. 3.0 Credits.
Students will explore Russian politics and culture from 1905 to 1953.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.219. Chinese Cultural Revolution. 3.0 Credits.
The Cultural Revolution was Mao Zedong’s last attempt to transform Chinese society spiritually and structurally. The events of this period were marked by social upheaval, personal vendettas, violence, massive youth movements, and extreme ideological pressure. This course will explore the Cultural Revolution from a variety of perspectives, focusing on the relationship between events in China from 1966-1976, and their interpretation in China and the West during the Cultural Revolution decade and since.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.220. Freshman Seminar: Trade Wars: Commerce and Competition in the Early Modern World. 3.0 Credits.
In the Age of Exploration, European states engaged in fierce competition for valuable natural resources, trade routes, and markets. This course will explore the ways in which Britain, France, Spain, Portugal, and the Netherlands vied with each other by land and sea to increase their share of global trade. Freshman Only.
Instructor(s): C. Consolino
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.221. Freshman Seminar: The Medieval City. 3.0 Credits.
This course focuses on the development and growth of medieval cities in western Europe. Students will explore the various functions of cities, uses of urban space, and challenges they faced.
Instructor(s): N. Daniels
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.223. History of Modern Germany. 3.0 Credits.
There is more to Germany than beer, BMWs, and Bayern Munich. We will explore culture, politics, and society to understand Germany and its position within Europe and the world.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.
AS.100.234. The Making of the Muslim Middle East, 600-1100 A.D.. 3.0 Credits.
A survey of the major historical transformations of the region we now call the 'Middle East' (from late antiquity through the 11th century) in relation to the formation and development of Islam and various Muslim empires. Cross-listed with Near Eastern Studies and the Program in Islamic Studies.
Instructor(s): T. El-Heithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.235. Freshman Seminar: Politics, Society and Economics in the Renaissance. 3.0 Credits.
This course will focus on the long-distance trade of both foodstuffs and clothe in order to investigate urbanization and the development of national monarchies in western Europe from the outbreak of the Black Death (1347) to the eve of the Reformation (1517).
Instructor(s): H. Stein
Area: Humanities, Social and Behavioral Sciences.

AS.100.236. Chinese Cultural Revolution. 3.0 Credits.
The Cultural Revolution was Mao Zedong’s last attempt to transform Chinese society spiritually and structurally. The events of this period were marked by social upheaval, personal vendettas, violence, massive youth movements, and extreme ideological pressure. This course will explore the Cultural Revolution from a variety of perspectives, focusing on the relationship between events in China from 1966-1976, and their interpretation in China and the West during the Cultural Revolution decade and since. Previously offered as AS.100.219.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.237. Freshman Seminar: Impeachments and Beyond: Law, Justice, and Politics in Latin America. 3.0 Credits.
This course is an introduction to legal ideas and institutions through the Latin American political experience. By the end of this course, students will be equipped with the fundamentals of Latin America’s long political history (from colony to present) and will be able to identify how legal ideas and institutions change over time. Students will also gain insights on debates and conversations on the relationship between law, justice, and politics that go beyond Latin America’s history.
Instructor(s): A. Caso Bello
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.241. American Revolution. 3.0 Credits.
This course provides an intensive introduction to the causes, character, and consequences of the American Revolution, the colonial rebellion that produced the first republic in the Americas, and set in motion an age of democratic revolutions in the Atlantic world. A remarkable epoch in world history, the revolutionary era was of momentous significance.
Instructor(s): P. Morgan
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.243. China: Neolithic to Song. 3.0 Credits.
This class offers a broad overview of changes in China from Neolithic times through the Song Dynasty (roughly from 5000 BCE through the 13th century CE) and will include discussion of art, material culture, and literature as well as politics and society. Close readings of primary sources in discussion sections and extensive use of visual material in lectures will help students gain firsthand perspective on the materials covered. Not open to students who have previously taken AS.100.208. Cross listed with East Asian Studies
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.244. The Power and Politics of Clothing in American History. 3.0 Credits.
This course explores the power of clothing and the politicization of appearances at moments of deep political and social unrest in American history (18th-20th centuries).
Instructor(s): S. Templier
Area: Humanities, Social and Behavioral Sciences.

AS.100.245. Freshman Seminar: You are what you eat: Food and Farm Politics, Policy, and Culture in 20th Century America. 3.0 Credits.
This class will examine food production and consumption both in the classroom and outside of it to understand how high-stakes policy and grassroots culture meet to shape our nutritional reality. Freshman only
Instructor(s): R. Stoil
Area: Humanities, Social and Behavioral Sciences.

AS.100.246. Colonial Latin American History Survey. 3.0 Credits.
This course offers a general survey of Colonial Latin American history, covering both Spanish and Portuguese America, from European conquest to the revolutionary wars of independence. Emphasis will be placed in exploring the nature and effects of conquest, the making of new plur-ethnic societies, and the eventual break of these societies from Spain and Portugal.
Instructor(s): G. Garcia Montufar
Area: Humanities, Social and Behavioral Sciences.

AS.100.248. Japan in the World. 3.0 Credits.
This course is an introduction to Japan's history from 1800 to the present with emphasis on the influences of an increasing global circulation of ideas and people. Topics include the emperor system, family and gender, imperialism, World War II, the postwar economy, and global J-pop.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences.

AS.100.249. Baltimore as Historical Site. 3.0 Credits.
The city of Baltimore will serve as a laboratory in which to study American History. We will explore the urban landscape on foot as well as through written sources.
Instructor(s): M. Ryan
Area: Humanities, Social and Behavioral Sciences.

AS.100.251. From Columbus to Calypso: The Caribbean and the Wider World. 3.0 Credits.
This course examines the history of the Caribbean and how five hundred years of colonization, slavery, piracy, rebellion, and revolution have shaped the politics and culture of the islands today.
Instructor(s): L. MacDonald
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.252. Invisible Borders: Exchanges and Migrations in the Modern Mediterranean. 3.0 Credits.
This course explores the patterns of movement formed and transgressed by empire, trade, sex tourism, cultural exchange, war, and nationalism, starting from the nineteenth century to the present-day refugee crisis.
Instructor(s): S. Rahnama
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.254. Modern Mexico from the Alamo to El Chapo. 3.0 Credits.
In this course we will use popular depictions of Mexico’s heroes and villains, tragedies and triumphs to delve into both the nation’s history and the importance of thinking historically.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences.
AS.100.255. The Haitian Revolution in World History. 3.0 Credits.
This introductory seminar examines the revolution that transformed the slave colony of Saint-Domingue into the first black republic and second independent nation in the Americas, and its repercussions around the world. Non-Majors welcome.
Instructor(s): N. Marvin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.256. Prostitution in a Global Perspective, 1750-2012. 3.0 Credits.
This course examines topics such as the ‘medical model’ of prostitution regulation, the rise of international anti-prostitution, and the responses of modern nationalists to sex work in a global context.
Instructor(s): S. Stewart
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.257. From Voice to Parchment: Media and Communication before the Printing Press, 800-1440. 3.0 Credits.
Epic traditions, call to Crusade, public curses, music of the troubadours: this course examines oral tradition and music—the “viral media” of pre-modern Europe—while tracing the impact of new recording technologies: early musical notation, manuscripts, and book production.
Instructor(s): J. Phillips
Area: Humanities, Social and Behavioral Sciences.

AS.100.260. Boom, Bust, and the Rise of Financial Capitalism in America, 1700-1900. 3.0 Credits.
This course explores how legal, social, and political contestation shaped the development of American financial capitalism. The course also focuses on how financial crises precipitated change throughout American history.
Instructor(s): J. Wallace
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.265. The Medieval City. 3.0 Credits.
This course focuses on the development and growth of medieval cities in western Europe. Students will explore the various functions of cities, uses of urban space, and challenges they faced.
Instructor(s): N. Daniels
Area: Humanities, Social and Behavioral Sciences.

AS.100.266. Jewish and Christian mysticism in the Middle Ages and the Early Modern Period. 3.0 Credits.
This course will trace the historical development of Jewish and Christian mysticism between the 12th and the 17th centuries.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.272. Online: Prostitution in a Global Perspective, 1750 to Present. 3.0 Credits.
This course examines topics such as the ‘medical model’ of prostitution regulation, the rise of international anti-prostitution, and the responses of modern nationalists to sex work in a global context.
Instructor(s): S. Stewart
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.279. Europe since 1945. 3.0 Credits.
This lecture course examines the political, social, and cultural history of post-war Europe with emphasis on the Cold War and the formation of the European Union.
Instructor(s): H. Balz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.282. Race & Power in Modern South Africa. 3.0 Credits.
South African history from 1800 to the present, with focus on the rise and fall of the apartheid racial state
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.291. Medicine in an Age of Empires, 1500-1800. 3.0 Credits.
How did medicine emerge as a distinctive body of knowledge and a profession in the early modern period? The answers lie in the histories of disease, empire, and global commerce.
Instructor(s): Z. Dorner
Area: Humanities, Social and Behavioral Sciences.

AS.100.295. American Intellectual History since the Civil War. 3.0 Credits.
Readings in American social thought since 1865, ranging across developments in philosophy, literature, law, economics, and political theory.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.301. America after the Civil Rights Movement. 3.0 Credits.
This course explores the history of late twentieth-century America by examining the social, economic, and political legacies of 1960s civil rights protest for the 1970s, 1980s, and 1990s. Students will also participate on an archiving project capturing the experience of Hopkins employees who have recollections of the decades immediately following the civil rights legislations of the 1960s.
Instructor(s): N. Connolly
Area: Humanities
Writing Intensive.

AS.100.303. Old Regime and Revolutionary France. 3.0 Credits.
Examines the history of France from the reign of Louis XIV to the French Revolution, focusing on early modern society, popular culture, absolutism, the Enlightenment, overseas empire, and the French and Haitian Revolutions.
Instructor(s): M. Kwass
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.304. Myth and History in Medieval Europe. 3.0 Credits.
Can a myth be history? This class examines how medieval historians used myths to shape, debate, and even forge their past, and how they redefined history writing in the process.
Instructor(s): N. Weijer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.306. America and the Great War, 1898-1920. 3.0 Credits.
This small, discussion-oriented course covers the period from the Spanish-American War through the end of WWI and the Red Scare that more or less ended in 1920.
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.307. Latin American Independence. 3.0 Credits.
This seminar examines the breakdown of the Spanish and Portuguese empires and the emergence of new states in Latin America in the nineteenth century. Topics include: war, revolution, slavery, liberalism, and monarchism.
Instructor(s): G. Paquette
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.308. Introduction to the History of Jewish Mysticism. 3.0 Credits.
The course will familiarize the student with the history of the main phenomena of Jewish mysticism from the ancient times to the present.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.309. American Social Thought since 1865. 3.0 Credits.
This course explores the intellectual development of the modern United States through readings in philosophy, literature, law, economics, politics, and social theory.
Prerequisites: Cannot enroll if you have taken AS.100.400, same course.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.310. The French Revolution. 3.0 Credits.
Political, social, and cultural history of one of the great turning-points in European history. Previously offered as AS.100.204.
Instructor(s): L. Mason
Area: Humanities, Social and Behavioral Sciences.

AS.100.311. National Pastimes: Sports, Culture, and American History. 3.0 Credits.
National Pastimes examines the development of sports in the United States over the course of the 20th century with a particular interest in the relationship between sports and politics as well as issues of race, gender, sexuality and class.
Instructor(s): A. Davis
Area: Humanities, Social and Behavioral Sciences.

AS.100.314. The Enlightenment. 3.0 Credits.
This course examines the Enlightenment, an intellectual movement that swept Europe in the eighteenth century to shape the modern world.
Instructor(s): M. Kwass
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.315. Jewish Political Thought and Social Imagination, 1880-1940. 3.0 Credits.
How a range of Jewish thinkers, activists, and creative writers grappled intellectually with the challenge of the nation-state, the rise and collapse of empires, antisemitism as a political phenomenon, the nature of politics and political action, the nature of modern societies, and the question of Jewish self-determination and sovereignty, 1880-1940. Readings by Herzl, Bernard Lazare, Freud, Kafka, Leshtshinsky, Arendt, Adorno, Michael Chabon, among others.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.316. American Foreign Policy in the Age of Human Rights. 3.0 Credits.
American Foreign Policy in the Age of Human Rights examines competing narratives about the origins of modern international human rights, and explores how those narratives historically informed American foreign policy from the American Revolution up to the present, with an emphasis on the twentieth century.
Instructor(s): K. Sohasky
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.318. The Age of Revolutions. 3.0 Credits.
This seminar focuses on the political, social, and economic thought animating the revolutions which transformed Europe and the Americas, c. 1760 - 1850.
Instructor(s): G. Paquette
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.319. The Tudors: Reforming England 1485-1603. 3.0 Credits.
This course will examine Tudor England, including the reigns of Henry VIII, Edward VI, Mary I, and Elizabeth I, and the intellectual and cultural movements of the Reformation and the Renaissance.
Instructor(s): J. Walker
Area: Humanities, Social and Behavioral Sciences.

AS.100.320. Writing U.S. Empire. 3.0 Credits.
Attends to the composition and interpretive problems raised by studying the history of American imperialism, 1880s-1930s.
Instructor(s): N. Connolly
Writing Intensive.

AS.100.321. From Ferguson to Cape Town: The Global Black Freedom Struggle since Slavery. 3.0 Credits.
This seminar underscores the global and historical dimensions of the black freedom struggle through a series of case studies spanning North America, Africa and Latin America. Major themes addresses include race, diaspora, and movement(s) from slavery to the present.
Instructor(s): J. Levy
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.322. America in the 1960s. 3.0 Credits.
The years between 1959, when the course begins, and 1971, when it ends, were tumultuous and divisive. This course explores the political, racial, and cultural struggles of a half century ago.
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.324. Dostoevsky’s Russia. 3.0 Credits.
Dostoevsky and the culture of his era but also echoes of his ideas of Russia, religion, ethnicity, freedom, authority, and gender from 1917 until today. Short papers, quizzes.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.325. Images of War in the 19th and 20th Centuries. 3.0 Credits.
This course examines the changing face of war in photographs, propaganda posters, comics, and film from the American Civil War to the "war on terror."
Instructor(s): H. Balz
Area: Humanities, Social and Behavioral Sciences.
Writing Intensive.

Instructor(s): R. Walters

AS.100.335. The American West. 3.0 Credits.
Area: Humanities, Social and Behavioral Sciences

Instructor(s): L. Jackson

listen to music.

AS.100.334. Billie Holiday and American Culture. 3.0 Credits.

A course examining introducing students to the life, times and music of Billie Holiday. We will read biographies, autobiographies, novels, and listen to music.

Instructor(s): L. Jackson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.343. Diaspora, Nation, Race, and Politics. 3.0 Credits.
For millions of people across the globe, political fate in the 20th century was defined at the intersection of diaspora, race, and nation — and this may be true in the 21st century as well. This course, a collaborative effort involving a historian and a political scientist, explores the parallels and divergences in the deployment of these terms in nationalist and transnational mobilization, literature and aesthetics, and group identity formation in Eastern Europe, Africa and the New World of the Americas. Set against the backdrop of the fall of significant empires in the late 19th and early 20th centuries, we will explore themes of migration, human rights, the nation-state system, and racism through history, political sociology, and political and social theory. We will pay particular attention to the theoretically exemplary Jewish and Black experiences of diaspora, race, and nation, engaging both with how those experiences were specially shaped by the imposition of national and racial logics and with Black and Jewish politics and thought in relation to those categories. Readings include Max Weber, W. E. B. Du Bois, Booker T. Washington, Theodor Herzl, Hannah Arendt, Benedict Anderson, Rogers Brubaker, Andrew Zimmerman, Michele Mitchell, David Scott.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.345. Religion, Secularity, and Nationhood in Modern Jewish Identity Politics. 3.0 Credits.
How have ethnonational, religious, and secular forms of self-definition played out in Jewish life over the past hundred years, and what sorts of relationships are taking shape between them now? Particular foci include: religious revival in Israel and the fate of Zionism’s ostensibly secular nationalist project in comparative perspective (Ravitzky, Walzer, Friedland); the surprising flourishing of kabbalistic/mystical thought in contemporary Jewish life (Garb); varieties of secular and religious visions of Jewish collective identity (Ohana, Lustick); new and resurgent forms of Judaism in the US; religion and gender (Fader), among other topics. Time at end of semester for independent reading and research.
Instructor(s): K. Moss; M. Hanchard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.346. Soviet-American Cold War. 3.0 Credits.
The focus will be on Soviet-American interactions, Cold-War Cultures, and the impact on both societies.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.347. Early Modern China. 3.0 Credits.
The history of China from the 16th to the late 19th centuries.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.348. 20th-Century China. 3.0 Credits.
The history of China from the last years of the Qing Empire to the post-Mao reforms.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.349. The Age of Pasternak. 3.0 Credits.
This course concerns Russian literature and the arts, including ballet, from the 1910s to the 1950s. Two short papers, journals, two quizzes, and no midterm or final.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.350. Capital before Capitalism: Economic Debates in the British Empire, 1600-1800. 3.0 Credits.
This course explores the events, ideas, and debates that shaped economic thought in early modern Britain and its empire before the advent of Capitalism.
Instructor(s): C. Consolino
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.352. Age Of Pasternak. 3.0 Credits.
This course concerns Russian literature and the arts, including ballet, from the 1910s to the 1950s. Two short papers, journals, two quizzes, and no midterm or final.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.353. Youth and Youth Movements during 20th Century: Germany, Britain, and the U.S. 3.0 Credits.
Through texts, music, and films, this course examines the rise of "youth" as a social and cultural category in a variety of forms, ranging from spontaneous (such as Rock'n'Roll and Techno) to state-organized (Hitler Youth).
Instructor(s): H. Balz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.355. Islam between History and Anthropology. 3.0 Credits.
Co-taught by an anthropologist and a historian, this course will explore recent scholarly debates about—and critiques of—the representations of Islam and Muslim societies.
Instructor(s): N. Khan; T. Shepard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.356. W.E.B. Du Bois and the Problem of the Color-Line. 3.0 Credits.
This seminar will introduce students to the ideas and legacy of the renowned American scholar, journalist, and activist, W.E.B. Du Bois (1868-1963), asking students to locate Du Bois in his historical context and in our own. Through readings and discussions of his key works in various forms, we will assess Du Bois’s impact on major debates in American politics, African-American affairs, and academic disciplines like sociology and history. We will track changes in Du Bois’s thinking over time, including in his views of racism, class, gender, liberalism, radicalism, imperialism, and war. Finally, we will consider the ways in which Du Bois’s work continues to shape our understanding of these issues and debates in contemporary American society.
Instructor(s): T. Shepard
Area: Humanities.

AS.100.357. Panic and Liberation: The Politics of Sex in 20th Century Europe. 3.0 Credits.
This course examines the 20th century history of sexual attitudes, desires, behaviors, identities, communities, and movements in Western Europe (most notably, Germany, France, and the United Kingdom).
Instructor(s): T. Shepard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.358. Black Code Studies: Black History and Digital Media. 3.0 Credits.
This course explores doing histories of people of African descent in an age of digital and social media. The focus will be on African-descended communities in the United States, but content will range across time space. Examples include: West African digital art communities; the use of slave trade databases to write Caribbean history; and the use of social media in social justice organizing from Paris to Baltimore. Students will explore questions of blackness, race, ethnicity, sex and sexuality, violence and justice while creating digital content using platforms like Wordpress, Omeka, Twitter, and Tumblr. Students will be evaluated on their acquisition of African American and Afro-Diasporic history; their knowledge of digital and social media platforms; and their ability to creatively and accurately relate the histories of blackness and black people to their representation and discussion online.
Instructor(s): J. Johnson
Area: Humanities, Social and Behavioral Sciences.

AS.100.359. Gender, Patriarchy, and the English Revolution. 3.0 Credits.
This course explores the varied experiences of gender and gender roles in seventeenth-century Britain and analyzes how these roles were challenged, changed, and sometimes upended during the English Revolution (1642-1660).
Instructor(s): C. Hinchliff
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.360. The Modern British World: Imperial Encounters, Regimes, and Resistance, from the American Revolution to the present. 3.0 Credits.
The Modern British World introduces some of the major themes and contestations tied to Britain's rise to global dominance and its ultimate decline as an imperial power.
Instructor(s): K. Hindmarch-Watson
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.361. Age of Tolstoy. 3.0 Credits.
Tolstoy and his era, 1820s to 1910s. Topics include state and politics, empire, the Russian identity, and forms of cultural expression. Students consider "War and Peace" and other masterworks.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.362. Children and Childhood in the Middle Ages. 3.0 Credits.
Seminar on the history of childhood and ideas of childhood around the medieval Mediterranean; themes include child custody; medieval education and punishment; parent-child private letters; child mortality and the arts of bereavement/consolation. Cross-listed with the Program in Islamic Studies and Near Eastern Studies.
Instructor(s): T. El-Heithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.363. The Development of the Sabbatian Movement. 3.0 Credits.
This course examines the development of Sabbatianism, the most important messianic claims of Sabbatai Tsevi, the spread of religious fervor among the Jews of Middle East, Europe, and North Africa, rabbinic opposition to the movement, and shall compare it to similar phenomena in Islam and Christianity. Special attention will be paid to reading of primary Sabbatian sources in English translation.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.364. Sacreligious Jews: Accusations of Ritual Crime in Pre-Modern Europe. 3.0 Credits.
This course will examine the history of the accusations of the Jews of ritual crime (blood libel, host desecration etc.) in pre-modern Europe.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.365. Culture & Society in the High Middle Ages. 3.0 Credits.
This course will treat the flourishing of culture and society in the High Middle Ages (11-14th centuries). Topics covered include the emergence of feudal society and literature, the economic, social and cultural revival of Europe in the 11th and 12th centuries, the Renaissance of the twelfth century and the growth of scholasticism and the University, and the development of feudal monarchies in England and France.
Instructor(s): G. Spiegel
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.366. History of Colombia 1800-present. 3.0 Credits.
This seminar examines the key moments in the history of Colombia from its independence in 1810 and the construction of a Liberal Republic. The course will concentrate on the crucial political events that have defined Colombia up until the present.
Instructor(s): E. Vargas
Area: Humanities, Social and Behavioral Sciences.

AS.100.369. Themes and Concepts in Jewish History. 3.0 Credits.
The course will introduce students to the main themes and debates in Jewish historiography.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.371. Jewish History in the 20th Century. 3.0 Credits.
Jewish history, politics, and culture across a century of enormous transformations and transformative enormities in Europe, the US, and the Middle East. Topics include: impacts on Jewish life of World War I, the Russian Revolution, and the post-imperial reordering of the Eastern Europe and the Middle East; Zionism and other modes of Jewish contestatory politics; the consolidation of American Jewry; Nazism and the Holocaust in Europe; formation and development of the State of Israel; the global reordering of Jewish life amid cross-currents of the Cold War, conflict in the Middle East, and success in the US. Substantial attention to recent and contemporary history including the dramatic changes in Israeli society and polity over the past forty years and the ongoing Israeli-Palestinian conflict. Each week, professor will provide detailed background lecture during first session and second session will be devoted to in-depth discussion of key primary texts and historical monographs that capture Jewish responses to 20th century processes and events.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.372. The Victorians. 3.0 Credits.
This course focuses on the politics of everyday life, consumption, intimate relations, and concepts of the self in Britain and its empire in the long nineteenth century. We devote particular attention to visual culture, entertainment, and the built environment. Course themes include popular nationalism; class differences; gender and body politics; and imperial expansion and racial thought.
Instructor(s): L. Pepitone
Area: Humanities, Social and Behavioral Sciences.
AS.100.374. Conquest, Conversion, and Language Change in the Middle Ages. 3.0 Credits.
Examines cases of imperial conquest and attendant religious transformation (Christianization; Islamization) and language change in the medieval Mediterranean (Europe and Middle East), e.g. transition from Latin to vernacular languages in Europe; Arabization; translation movements.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.378. Race and Capitalism in the City. 3.0 Credits.
This course examines the intersections of race and capital in U.S. cities since 1800. In addition to classroom lectures and exercises involving various kinds of digital media, students will participate in walking tours exploring the particular conjunctures of race and economic development in Baltimore as manifested through the histories of slavery, segregation, and post-1960s urban growth. Students will also gain practice communicating their ideas through blog posts, policy briefings, and other modes of reporting.
Instructor(s): M. Speller
Area: Humanities.

AS.100.379. Age of Religious Wars: Reformation Europe, 1500-1650. 3.0 Credits.
Offers an in-depth examination of a volatile time in European history, when the rupture of unity in the Christian Church led to wide scale political upheaval, violence, rioting, and persecution.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.381. Religion, Medicine, and the Mind in Japan. 3.0 Credits.
This seminar explores the relationship between religion and medicine in treating disorders of the mind and soul throughout Japanese history. We will consider such topics as animal spirit possession, Buddhism, family-based care, psychotherapy, gender, and social withdrawal.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.382. Early Modern African Atlantic. 3.0 Credits.
This course examines the history of West and Central Africa and its diasporic people and cultures during the early modern period (c. 1400-1750) in disparate parts of the Atlantic world, including Europe, Latin America, the Caribbean, and Anglo-America. Themes include: West and Central African political and religious cultures; trans-Atlantic slavery; African Christianity; and the question of cultural survivals.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.383. Conversion and Apostasy in the Middle Ages. 3.0 Credits.
Compares religious transformation in medieval Europe and the Middle East (ca. 600-1500), including conquest and conversion; conversion narratives; apostasy, martyrdom and other encounters between medieval Jews, Christians, and Muslims.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.385. Mobility and Encounter in the Medieval Indian Ocean. 3.0 Credits.
This seminar discusses forms of mobility and exchange: trade and travel, conquest and religious transformation, diasporas and migration, the spread of practices and technologies across the Indian Ocean from the 8th to 16th centuries.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.387. Everyday Life in the Medieval Middle East. 3.0 Credits.
In this seminar, students will explore the daily lives of non-elites in medieval Egypt (i.e. average folk, not kings in palaces)—including their food and cooking; clothes (and government edicts regulating fashion); the houses they inhabited; their marriage patterns, divorce rates, and child custody battles; and the burden of taxes on the working poor (e.g. urban craftsmen). We will examine and discuss artifacts and documents, including surviving hats (stuffed with recycled documents), private letters, marriage contracts (and the clauses women inserted into them), petitions for charity, and court records.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.389. History of Law and Social Justice. 3.0 Credits.
Cause lawyering aims to change the status quo. This course examines histories of this approach to social justice, from battles against the slave trade to contemporary campaigns for marriage equality.
Instructor(s): M. Jones
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.397. U.S. Histories Male and Female. 3.0 Credits.
This seminar will be devoted to exploring gender differences as they have been expressed in a sequence of autobiographies and autobiographical fiction set in a shifting social and historical context.
Instructor(s): M. Ryan
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.100.398. Images of Postwar Japan. 3.0 Credits.
This seminar explores Japan’s changing place in the world in the decades following World War II, with an emphasis on analyzing visual media such as photographs, films, advertisements, and comic books. Topics include relations with the U.S. and other countries in East Asia, particularly the two Koreas; the atomic bombings of Hiroshima and Nagasaki; and the global contexts for an expanding Japanese consumerism in the late 20th century.
Instructor(s): H. Kim.

AS.100.399. Decolonization and Citizenship in Africa, 1945-2015. 3.0 Credits.
Critically explores issues of decolonization and citizenship in Africa from WWII to the present. Emphasis on political inclusion and exclusion, and violence, fostered by nationalist movements and postcolonial African governments.
Instructor(s): P. Larson
Area: Humanities Writing Intensive.

AS.100.403. Law & Custom in Colonial Africa. 3.0 Credits.
Examines how colonial rule transformed African legal systems, while Africans used European law for political resistance and personal gain.
Research project based on colonial South African court records.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences.
AS.100.404. John Locke. 3.0 Credits.
Seminar style course in which John Locke's major works will be read intensively, together with some of his contemporaries' works, and select scholarly interpretations.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.405. European Socialist Thought. 3.0 Credits.
Examination of socialist, social-democratic, communist, and anarchist theorists, including Proudhon, Marx, Engels, Bakunin, Bernstein, Lenin, Luxemburg, and Sorel.
Instructor(s): P. Jelavich
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.406. American Business in the Age of the Modern Corporation. 3.0 Credits.
This course will focus on business organizations, their performance, and sociopolitical relations in the 20th century. Each of the students will be expected to reach conclusions about that history and will be required to sharpen those conclusions by writing three, interrelated essays.
Instructor(s): L. Galambos
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.411. Readings in the History of Public Health in the 20th and 21st Centuries. 3.0 Credits.
The students will read major and some minor works in the history of global public health and will each develop their own concept of how and why the major institutions, professions, and practices associated with public health have evolved over the past long century. To help the students focus on their ideas, they will write three essays on particular aspects of the history.
Instructor(s): L. Galambos
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.412. Jewish History in British Mandatory Palestine 1917-1947. 3.0 Credits.
Recent historical writing on Jewish politics, culture, and society in British Mandatory Palestine, 1917-1947. Significant attention will also be paid to work on Palestinian Arab society and politics and to Jewish-Arab-British relations.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.413. London 1580-1830: The History of Britain's Capital City. 3.0 Credits.
Seminar-style class analyzing the social, cultural, gender, religious, economic, and political history of London from Shakespeare's time through revolutions, plague, fire, and commercial, colonial, and industrial expansion.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.414. Love, Death, and the Afterlife in the Medieval West. 3.0 Credits.
Romantic love, it is often claimed, is an invention of the High Middle Ages. The vocabulary of sexual desire that is still current in the twenty-first century was authored in the twelfth and thirteenth, by troubadours, court poets, writers like Dante; even by crusaders returning from the eastern Mediterranean. How did this devout society come to elevate the experience of sensual love? This course draws on primary sources such as medieval songs, folktales, the "epic rap battles" of the thirteenth century, along with the writings of Boccaccio, Saint Augustine and others, to understand the unexpected connections between love, death, and the afterlife from late antiquity to the fourteenth century. Each week, we will use a literary or artistic work as an interpretive window into cultural attitudes towards love, death or the afterlife. These readings are analyzed in tandem with major historical developments, including the rise of Christianity, the emergence of feudal society and chivalric culture, the crusading movement, and the social breakdown of the fourteenth century.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.416. Urban Space and City People. 3.0 Credits.
Readings and research in urban history focused on the United States since the 18th century with special attention to gender and race.
Instructor(s): M. Ryan
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.417. Capitalism, Socialism, and Democracy. 3.0 Credits.
This course examines the ideas of Joseph A. Schumpeter, the father of entrepreneurial studies. Each student will develop a perspective on the history of capitalism and socialism.
Instructor(s): L. Galambos
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.418. Comparative Slavery: Haiti and Brazil. 3.0 Credits.
Haiti is born after a powerful slave insurrection (1804). Brazil was the last country to abolish slavery (1888). Why did these slave societies, which shared many common characteristics, have such different histories?
Instructor(s): J. Hebrard
Area: Humanities, Social and Behavioral Sciences.

AS.100.420. George Washington and His World. 3.0 Credits.
This research-intensive course explores eighteenth-century America through George Washington's papers. Although Washington is not the most representative person, he is an exceptionally well-documented one; we use his papers to focus on life in Virginia, North America, and the Atlantic World. Workshop-style research and writing prepare students for the craft of history.
Instructor(s): F. Furstenberg
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.422. Society & Social Change in 18th Century China. 3.0 Credits.
What did Chinese local society look like under the Qing Empire, and how did it change over the early modern era?
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences.
AS.100.423. Multiethnic Japan. 3.0 Credits.
An advanced undergraduate seminar on the intertwined histories of race, ethnicity, and empire in Japan and its former colonies from the early twentieth century to the present.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.424. Women & Modern Chinese History. 3.0 Credits.
This course examines the experience of Chinese women, and also how writers, scholars, and politicians (often male, sometimes foreign) have represented women's experiences for their own political and social agendas. Cross listed with East Asian Studies.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.426. Popular Culture in Early Modern Europe. 3.0 Credits.
Witchcraft, magic, carnivals, riots, folk tales, gender roles; fertility cults and violence especially in Britain, Germany, France, and Italy.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.437. Late Imperial China: History and Fantasy. 3.0 Credits.
Students in this seminar will look at the ways in which Chinese and Western scholars, novelists, film-makers, and artists have represented China's Late Imperial period. We will look at the way foreigners have imagined China, and the ways in which Chinese writers past and present have fancifully, nostalgically, and inventively rendered their personal and national pasts. The course will explore issues of historical, geographical, and literary imagination. Cross-listed with East Asian Studies
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.441. Migration and the Americas. 3.0 Credits.
From the Spanish Conquest to contemporary debates in the US, this course looks at the great diversity of migrations that have shaped life in the Americas.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.445. African Fiction as History. 3.0 Credits.
An exploration of Modern African history through the African historical novel.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.456. Getting Medieval? Public Violence in the Middle Ages. 3.0 Credits.
Traditional studies and popular culture often consider violence as a hallmark of medieval life and hence, present it as a fundamental difference between a 'brutal and violent' Middle Ages and a 'civilized and humane' (Western) modernity. To evaluate these claims and images, we will examine different forms of violence in medieval societies—European and Middle Eastern—especially (i) martyrdom, (ii) communal violence, and (iii) public punishment. After exploring the specific cultural meanings of these practices, we will re-examine those modern polemics that invoke 'the medieval' (often vis-à-vis non-Western traditions and societies).
Instructor(s): T. Elieithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.482. Historiography Mod China. 3.0 Credits.
A survey of assumptions and approaches in the study of modern Chinese history, as written by Chinese, Japanese, and Western historians.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.486. Jim Crow in America. 3.0 Credits.
Explores the history of legalized racial segregation in the United States from the nineteenth and twentieth centuries.
Instructor(s): N. Connolly
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.488. The Caribbean World, 1450-1850. 3.0 Credits.
The Caribbean was the key focal point of overseas European expansion in the early modern world. This course traces developments in the region from the Tainos to Toussaint Louverture.
Instructor(s): P. Morgan
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.494. Senior Honors Seminar. 1.0 Credit.
A two-semester coordinating seminar for history majors writing senior honors theses. Admission is granted by instructor only after the student has selected a faculty thesis advisor. AS.100.494 is to be taken concurrently with AS.100.507 Senior Thesis.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.495. Senior Honors Seminar. 1.0 Credit.
The Senior Honors Seminar is a coordinating seminar for senior history majors who are writing senior honors theses and wish to graduate with departmental honors. To be taken concurrently with AS.100.508, Senior Thesis.
Corequisites: Co-requisite: AS.100.508
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.497. Year of Revolt: 1968 in Europe. 3.0 Credits.
The shorthand “1968” stands for rebels and revolutions, but also for incremental changes throughout the 1960s that fundamentally changed the post-war order and the Cold War in East and West.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.

AS.100.498. History of the Family & Gender in the United States. 3.0 Credits.
Topics include: history of emotions; politics of sexuality and marriage; impact of race, ethnicity, and class on family life; women and gender inequality. Primarily colonial era through the early twentieth century, with some attention to contemporary politics of family, gender, and sexuality.
Instructor(s): T. Ditz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.499. Film and Propaganda in Nazi Germany. 3.0 Credits.
By examining a range of cinematic works—from explicitly ideological pseudo-documentaries to entertainment films—this course will explore the transmission of propaganda into the everyday culture of Nazi Germany.
Instructor(s): H. Balz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.501. Internship. 1.0 Credit.
Instructor(s): J. Brooks; M. Johnson; T. Shepard.

AS.100.502. Internship. 1.0 Credit.
Instructor(s): Staff.

AS.100.507. Senior Thesis. 3.0 Credits.
Two semesters. Senior thesis writers will undertake research in primary materials that will explore a significant historical issue or problem. The DUS will confirm admission as soon as the student has selected a faculty thesis advisor: the outside deadline for confirmation is May 1. AS.100.507 is to be taken concurrently with AS.100.494 Senior Honors Seminar.
Instructor(s): E. Rowe
Writing Intensive.

AS.100.508. Senior Thesis. 3.0 Credits.
This seminar is required for senior history majors who are writing senior honors theses and wish to graduate with departmental honors.
Prerequisites: Pre-requisite: AS.100.507
Instructor(s): J. Brooks; S. Berry
Writing Intensive.

AS.100.535. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): Staff.

AS.100.536. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): Staff
Writing Intensive.

AS.100.594. Internship - Summer. 1.0 Credit.
Instructor(s): A. Burgin; E. Rowe; K. Moss; M. Ryan.

AS.100.599. Independent Study. 3.0 Credits.
Instructor(s): G. Faquette; H. Balz; K. Moss.

AS.100.602. The French Revolution.
Introduces graduate students to the rich historiography of the French Revolution. Topics include: revolutionary origins, political culture and radicalization, citizenship, violence, family & gender, the search for stability after the Terror, global revolution, Napoleon's Brumaire coup.
Instructor(s): L. Mason
Area: Humanities, Social and Behavioral Sciences.

Instructor(s): F. Furstenberg
Area: Humanities, Social and Behavioral Sciences.

AS.100.604. Readings in the Early U.S. Republic/Nineteenth Century.
Readings in the Early U.S. Republic/Nineteenth Century
Instructor(s): F. Furstenberg.

AS.100.605. Modern Britain & the British Empire.
This is a graduate reading seminar covering Modern Britain and the British Empire, with particular focus on urban space, labor, gender, and comparing political ideologies.
Instructor(s): K. Hindmarch-Watson
Area: Humanities, Social and Behavioral Sciences.

AS.100.606. South African History and Historiography.
Reading seminar in the history and historiography of South Africa from the late precolonial period through the present.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences.

AS.100.607. Consumer Revolution in Global Perspective.
First semester of year-long seminar examining transformations in European consumption from 1650 to 1800. Topics include cultural theory; fashion, gender, and social identity; capitalism, retail, and credit; Enlightenment and the public sphere; political economy; overseas empire; globalization; and the Atlantic revolutions.
Instructor(s): M. Kwass
Area: Humanities, Social and Behavioral Sciences.

AS.100.608. The Consumer Revolution in Global Perspective.
Second semester of year-long seminar examining transformations in European consumption from 1650 to 1800. Topics include capitalism and consumption; political economy; fashion, gender, and identity; Enlightenment and the public sphere; globalization; empire and colonization; and the Atlantic revolutions.
Instructor(s): M. Kwass
Area: Humanities, Social and Behavioral Sciences.

AS.100.611. Kabbalah and the Enlightenment: Reading 'The Manuscript' Found in Saragossa.
The course will discuss the European Enlightenment's attitude to the Jewish esoteric lore. As a lens to discuss this topic, we shall use Jan Potocki's novel "The Manuscript Found in Saragossa".
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.612. Everyday Life in Medieval Cairo.
Introduction to sources and methods available to social historians of the medieval Middle East, including close readings of documents (private letters, legal deeds, etc.) and discussing their production and survival. Grad Students only.
Instructor(s): T. Elleithy
Area: Humanities, Social and Behavioral Sciences.

A reading seminar on the interconnected histories and historiographies of Japan and Korea in the nineteenth and twentieth centuries.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences.

AS.100.614. Seminar in Modern Chinese History.
A seminar covering major milestones in research on late imperial and modern Chinese history, primarily in English. Open to undergraduates with the permission of the instructor.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.615. States, Scribes, and Archives: Medieval Arabic Documentary Cultures.
A historical survey of the bureaucratic practices of medieval Islamic states (in comparative perspective); includes close readings of primary official documents, e.g. petitions, edicts, fiscal receipts, and administrative reports.
Instructor(s): T. Elleithy
Area: Humanities, Social and Behavioral Sciences.
AS.100.617. Space, Place, and History.
A workshop on the spatial dimension of modern history. Readings will include monographs, some theoretical readings, and student research, mostly focused on the Americas with some comparison with Western Europe. Open to undergraduate juniors and seniors.
Instructor(s): M. Ryan
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.618. Historiography of Law and Empire.
Reading seminar covering recent work on the history of law in the context of empire. Emphasis on colonial rule in Africa, with some attention to Asia and the Americas.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences.

AS.100.619. Early Modern France.
Second semester of year-long reading seminar on French history from Louis XIV to the French Revolution. Topics include: absolutism, the Enlightenment, gender and sociability, consumption and trade, the French empire, the French Atlantic, the French Revolution, and the Haitian Revolution.
Instructor(s): M. Kwass
Area: Humanities, Social and Behavioral Sciences.

AS.100.620. Early Modern France.
The first part of a two-semester sequence, this seminar examines the history of France and its empire from the seventeenth century to the French Revolution.
Instructor(s): M. Kwass
Area: Humanities, Social and Behavioral Sciences.

AS.100.625. The Right and the Far Right in Western Europe, 1870 to the Present.
We will explore both classic and new histories of right-wing and far-right political movements.
Instructor(s): T. Shepard
Area: Humanities, Social and Behavioral Sciences.

AS.100.627. Histories of Development.
Reading seminar on the history of development as both ideology and practice in the nineteenth and twentieth centuries.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences.

AS.100.630. Modern European Imperialism and the History of Sex and Sexuality.
This reading seminar will explore how the history of sexuality has shaped recent historiographies of European empires.
Instructor(s): T. Shepard.

AS.100.631. Ibero-Atlantic History.
A reading seminar on the history and historiography of the Portuguese and Spanish empires c. 1600-1900.
Instructor(s): G. Paquette
Area: Humanities.

AS.100.633. Spain and its Empire.
This graduate seminar will explore the historiography of Spain and its empire, 1480-1700.
Instructor(s): E. Rowe.

AS.100.635. Topics in European Imperial History.
This graduate reading course covers key topics in European Imperial History, c. 1600-1900.
Instructor(s): G. Paquette
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.639. Topics in the History and Sociology of Nationalism.
Advanced topics in the history and sociology of nationalism, with special attention to questions of childhood and education in the age of the nation-state; memory and memory-conflicts; nation and European overseas empire. Open to undergraduates with permission of instructor.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.641. Global Catholicism in the Early Modern Period.
Explores religious culture in medieval and early modern Europe, with an emphasis on spiritual beliefs and practices, relics, miracles, pilgrimage, and saint-making. Emphasis on reading and discussing written sources and visual culture. Graduate students only.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.643. Jewish Paths Through Modernity.
Intensive introduction to the key trends and trajectories in modern Jewish history and the major themes in Jewish historiography. Intended to serve both graduate students outside the Jewish history field and graduate students pursuing a field in modern Jewish history.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.644. Approaches to Brazilian History.
A reading seminar on the history and historiography of Brazil (colonial and national periods). Open to undergraduates with the permission of the instructor.
Instructor(s): G. Paquette
Area: Humanities, Social and Behavioral Sciences.

AS.100.645. Race, Law, History.
This seminar examines the relationship of law to the construction of race and inequality in US history, investigating the legal archive through the perspectives of critical race theory and critical legal history.
Instructor(s): M. Jones
Area: Humanities, Social and Behavioral Sciences.

AS.100.646. Marvels and Wonder in medieval Arabic Culture.
Explores the concept of marvels in different genres of medieval Arabic culture: Qur’anic exegesis; travel literature; ‘ethnography’; cosmography and geography; marvels of the natural world (e.g. hermaphrodites); Muslim views of pre-Islamic (‘pagan’) monuments.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.648. Crown, Court, and Charter: Political Culture in the High Middle Ages.
Explores mechanisms of political power and the rise of the state in Europe during the High Middle Ages by analyzing royal ideology, administrative growth, legal change, and cultural production.
Instructor(s): A. Lester
Area: Humanities, Social and Behavioral Sciences.

AS.100.650. The American South.
Instructor(s): M. Johnson.
AS.100.651. Readings in Urban and Suburban America: The Twentieth Century.
Introduces students to intellectual trends shaping historical treatments of urban and suburban life in twentieth-century America.
Instructor(s): N. Connolly.

AS.100.656. Reading Koselleck.
The course will be devoted to close reading of the works of Reinhard Koselleck.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.657. Reading Koselleck.
The course will be devoted to close reading of the works of Reinhard Koselleck.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.661. Racial Literacy in the Archives.
This course explores how to use race as a historical category of analysis, and teaches attendees how to locate how historical actors deploy race and racism to make claims, organize labor and identities, and imagine political possibilities.
Instructor(s): N. Connolly
Area: Humanities, Social and Behavioral Sciences.

AS.100.671. Play and Violence in Medieval France.
Since the work of Geertz, Huizinga, Bakhtin and Caillois, among others, the intersection of play and violence has been a focal point for historians, anthropologists, literary scholars, even psychologists. This seminar traces the twin themes of violence and play as instantiated by the fighting classes in the High Middle Ages, beginning with the emergence of the tournament and the crusading movement in the eleventh century. By examining sources in Old French and Latin, we will contextualize music, dances, comedies, and contests that accompanied the violent rituals around which French aristocratic life revolved. Course may not meet weekly.
Instructor(s): J. Phillips
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.680. Reading Seminar in Atlantic History 1600-1800.
This reading seminar will highlight some of the major new works and wide-ranging genres in this lively, stimulating field.
Instructor(s): P. Morgan.

AS.100.681. Research Seminar in Atlantic History, 1600-1800.
Continuation of AS.100.680
Instructor(s): F. Furstenberg
Area: Humanities, Social and Behavioral Sciences.

AS.100.684. Research Seminar in the Atlantic World, 1500-1810.
This seminar selectively explores the emergence and subsequent growth of the Atlantic basin as a site for exchange among and within the continents of Europe, Africa, and the Americas in the early modern era.
Instructor(s): P. Morgan.

AS.100.685. Reading Seminar in Atlantic History.
Instructor(s): P. Morgan
Area: Humanities, Social and Behavioral Sciences.

AS.100.692. Graduate Reading Seminar in Early American History.
A probing look at various genres and classics ranging from Native Americans to the Early Republic.
Instructor(s): P. Morgan
Area: Humanities, Social and Behavioral Sciences.

AS.100.695. Problems in U.S. Social & Cultural History.
This is a seminar reading widely in U.S. social and cultural history, ranging chronologicaly this semester from the mid-18th century to the late 19th century.
Instructor(s): R. Walters.

AS.100.696. Problems in American Society and Culture.
An intensive graduate seminar exploring various topics in US social and cultural history, focusing on the period from the late 19th century to the late 20th century.
Instructor(s): R. Walters.

AS.100.699. Neoliberalism.
Readings on the history, theory, and politics of neoliberalism, from midcentury to the present.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences.

AS.100.700. American Intellectual History.
Readings in late nineteenth- and twentieth-century American social theory and historical works on related themes.
Instructor(s): A. Burgin.

AS.100.702. European Empires in the Indian Ocean.
A reading overview of Portuguese, Dutch, English and French empire in the Indian Ocean.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences.

AS.100.703. Nationhood and Nationalism: theory, historiography, sociologies.
Theories, historiographies, and sociologies of nationhood and nationalism. Nationhood as institutional form, practical category, and site of contestation. Nationalisms and nationalist movements, nation-states and nationalizing states, borderlands, memory struggles. The subjectivities generated by nationalism and national conflict, including forms of national minorityhood. Recent work on national indifference, nation and empire, nation and religion, and supranationalisms and internationalisms.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.711. Approaches to International, Transnational and Global History.
Graduate students will read and analyze classic as well as recent works of International, Transnational and Global History.
Instructor(s): G. Paquette
Area: Humanities, Social and Behavioral Sciences.

AS.100.713. Black Womanhood.
What does a usable history of black womanhood (black queer and trans womanhood inclusive) look like? Black women's history across time and space.
Instructor(s): J. Johnson; M. Jones
Area: Humanities, Social and Behavioral Sciences.

AS.100.716. Cultural Theory For Historians.
An examination of modern cultural theories, with emphasis on mass culture and consumerism. Authors include Simmel, Krakauer, Benjamin, Horkheimer, Adorno, Barthes, Debord, Bourdieu, and de Certeau.
Instructor(s): P. Jelavich.

AS.100.721. Topics In African History.
Critical readings on selected themes in African history and historiography.
Instructor(s): S. Berry.
AS.100.724. Sex and Slavery.
Research and methods in the field of sexuality and slavery studies.
Instructor(s): J. Johnson
Area: Humanities, Social and Behavioral Sciences.

AS.100.728. Historical Writing in the Middle Ages.
The course will begin with readings of literary and critical theory, as a preparation for the study of modes of historical writing in the Middle Ages. We will then read a sampling of medieval historiographical texts, beginning with Eusebius.
Instructor(s): G. Spiegel.

AS.100.729. Reading Seminar: British America and the Early United States in Atlantic Perspective.
Introduction to the history and historiography on British North America and the United States.
Instructor(s): F. Furstenberg.

AS.100.730. Reading Seminar: British America and the Early United States in Atlantic Perspective.
Instructor(s): F. Furstenberg.

A reading seminar in colonial African history; the focus may be on French African empire.
Instructor(s): P. Larson.

AS.100.732. Urban Space and City People.
Readings and research in urban history focused on the United States since the 18th century with special attention to gender and race.
Instructor(s): M. Ryan.

AS.100.733. Reading Qing Documents.
Open to advanced undergraduates with at least one semester of Classical Chinese. This course has several objectives. First and foremost, it is a hands on document reading class designed to familiarize students with the skills, sources, and reference materials necessary to conduct research in Qing history. To that end, we will spend much of our time reading documents. At the same time, we will engage in problem solving exercises designed to develop and enhance basic research skills. Finally, several important archive-based secondary works in the secondary literature are available on reserve for your reference. These works demonstrate the ways in which historians have recently applied archival skills (and materials).
Instructor(s): T. Meyer-Fong.

AS.100.735. Early Modern Britain.
Instructor(s): J. Marshall.

AS.100.736. Early Modern Britain.
Instructor(s): J. Marshall.

AS.100.744. Twentieth Century France and the French Empire.
We will explore major recent work in the history of France, with particular attention to transnational and imperial questions.
Instructor(s): T. Shepard.

AS.100.749. Social Theory for Historians.
An examination of the works of Marx, Durkheim, and Weber, as examples of the Hegelian, positivist, and hermeneutic traditions of social theory.
Instructor(s): P. Jelavich.

AS.100.750. Victorian Culture and Society.
This course covers major thematic and interpretive approaches to family formations, urban environment, popular nationalism, class cultures, feminism and body politics, Empire and racial thought, commercial culture, the media and concepts of the self.
Instructor(s): J. Walkowitz
Area: Humanities, Social and Behavioral Sciences.

AS.100.753. Twentieth Century Seminar.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in 20th century history. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.

AS.100.755. Twentieth Century Seminar.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in 20th century history. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.756. Reading Seminar in Chinese History.
A seminar covering recent work on late imperial and modern Chinese history, primarily in English.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.760. The Cairo Geniza.
Documentary sources from the Cairo Geniza in Judaeo-Arabic, Arabic, and Hebrew (depending on student interest). Diplomatic, paleography, research methods, historiography, and history of the field. Arabic required, some Hebrew preferred.
Instructor(s): M. Rustow
Area: Humanities, Social and Behavioral Sciences.

AS.100.761. History of Capitalism.
Readings on the history of capitalism since the mid-nineteenth century, with an emphasis on the American context.
Instructor(s): A. Burgin.

AS.100.762. History and Historiography of 19th France in Europe and the World.
We will explore recent and classic studies of 19th-century French history, with particular attention to transnational and colonial questions.
Instructor(s): T. Shepard.

AS.100.765. Problems in Women and Gender Studies.
An exploration of recent work in women's and gender history, focusing on some of the following: sexuality, cultural production, politics, family formation, work, religion, difference, and civic orders.
Instructor(s): E. Rowe; H. Kim.

AS.100.766. Problems in the History of Women & Gender.
An exploration of recent work in modern European and US women's and gender history, focusing on some of the following: sexuality, cultural production, politics, family formation, work, religion, differences, and civic orders. A continuation of AS.100.765.
Instructor(s): T. Ditz
Area: Humanities, Social and Behavioral Sciences.
AS.100.769. Gender History Workshop.
Workshop for presentation of works-in-progress on the history of women, gender, and/or sexuality, including drafts of dissertation chapters, research papers, talks, and proposals. Students in disciplines other than history are welcome.
Instructor(s): E. Rowe; H. Kim.

AS.100.770. Gender History Workshop.
Workshop for presentation of works-in-progress on the history of women, gender, and/or sexuality, including drafts of dissertation chapters, research papers, talks, and proposals. Students in disciplines other than history are welcome. Graduate students only.
Instructor(s): K. Hindmarch-Watson; T. Ditz
Area: Humanities, Social and Behavioral Sciences.

AS.100.772. The Indian Ocean and European Empire.
A reading seminar on the history and historiography of European Empire in the Indian Ocean region.
Instructor(s): P. Larson.

AS.100.781. The Seminar.
This course features presentations from invited speakers. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.782. The Seminar.
This course features presentations from invited speakers. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.783. Seminar: Medieval Europe.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in Medieval European History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.784. Seminar: Medieval Europe.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in Medieval European History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.785. Seminar: Early Modern Europe.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in Early Modern European History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.786. Seminar: Early Modern Europe.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in Early Modern European History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.787. Seminar: Modern Europe.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in Modern European History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.788. General Seminar: Modern Europe.
A graduate workshop in which graduate students, faculty, and invited speakers present their latest research results in Modern European History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.789. Seminar: American.
A seminar series in which graduate students, faculty, and invited speakers present their latest research results in American History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.790. General Seminar: America.
A seminar series in which graduate students, faculty, and invited speakers present their latest research results in American History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.791. Seminar: Latin American.
A seminar series in which graduate students, faculty, and invited speakers present their latest research results in Latin American History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.792. General Seminar: Latin America.
A seminar series in which graduate students, faculty, and invited speakers present their latest research results in Latin American History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.793. Seminar: African.
A seminar series in which graduate students, faculty, and invited speakers present their latest research results in African History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.794. General Seminar: Africa.
A seminar series in which graduate students, faculty, and invited speakers present their latest research results in African History. Q&A, with an emphasis on critical thinking, intellectual discussions, and written and oral presentations. Course may not meet weekly.
Instructor(s): Staff.

AS.100.797. First Year Graduate Workshop.
First year graduate workshop.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences.

AS.100.798. First Year Graduate Workshop.
First year graduate workshop.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences.
AS.100.801. Dissertation Research.
Instructor(s): Staff.

AS.100.802. Dissertation Research.
Instructor(s): Staff.

AS.100.803. Independent Study.
Instructor(s): Staff.

AS.100.804. Independent Study.
Instructor(s): A. Burgin; G. Paquette; H. Kim; S. Berry; W. Rowe.

AS.100.821. Fall Practicum.
Instructor(s): W. Rowe.

AS.100.822. Spring Practicum.
Instructor(s): Staff.

AS.100.890. Independent Study.
Instructor(s): Staff.

AS.100.891. Summer Practicum.
Instructor(s): Staff.

Cross Listed Courses

History of Art

AS.010.627. Patronage and Power: The Art of the Book in the Middle Ages.

As a major global power straddling three continents, the Ottoman Empire developed a rich and diversified ceremonial culture aimed at impressing local and international audiences alike. This seminar will explore the ways in which works of art and architecture provided settings and apparatus for, and were themselves shaped and enlivened by, the ceremonial acts in which they featured. Covering the period between the sixteenth and nineteenth centuries, we will address a range of case studies—including mosque inaugurations, royal processions, the reception of foreign ambassadors, and the exchange of diplomatic gifts—with regard to their sociopolitical, visual, material, and spatial contexts. A major concern of the seminar will be the question of how Ottoman ceremonies, together with their staging and attendant art forms, were adapted in response to changing conditions and audiences, particularly with the shift from the early modern to the modern period. While our focus will be on the Ottoman Empire and its interactions with the surrounding world, the course will also consider the ceremonial cultures of two other great Islamic polities, Iran and Mughal India, which provide telling points of contrast to the Ottoman case.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.629. Ceremonial, Diplomacy, and Gift-Giving in Ottoman Visual Culture.

AS.010.630. Art of the Caliphate: Visual Culture and Competition in the Medieval Islamic World. 3.0 Credits.
Despite its modern-day association with a fringe extremist movement, the term “caliphate” was traditionally used to describe the Muslim world at large, the political and spiritual ruler of which bore the title of caliph. The original Islamic caliphate was established in the seventh century as a vast empire centered on the Middle East and extending deep into Africa, Asia, and Europe. It soon broke apart into a series of competing powers, until in the tenth century, three rival dynasties—the Baghdad-based Abbasids, the Spanish Umayyads, and the Fatimids of North Africa—each claimed to be the rightful caliphate. This course will examine how these fascinating political developments and conflicts played out in the realm of art and architecture between the seventh and thirteenth centuries. As well as palaces, mosques, and commemorative buildings, the course will look at media ranging from ceramics and metalwork to textiles and illustrated manuscripts, with many of the artifacts being viewed firsthand in local museum collections. These works will be considered in relation to such themes as patronage, audience, ceremony, and meaning. Particular attention will be paid to how the various caliphatess—both in emulation of and competition with one another—used visual culture as a powerful tool to assert their legitimacy.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.625. Patronage and Power: The Art of the Book in the Middle Ages. 3.0 Credits.
This research seminar surveys the rich history of manuscript painting in the Middle Ages through the lens of patronage. By focusing on elite patrons—the Popes, Clerics, Holy Roman Emperors, Princes, Princesses, and other ruling figures—we will investigate how changes in style from the early Christian period through the fifteenth century reveal the fluid nature of politics and power during this volatile time period. We will visit local collections of manuscripts (e.g. the Walters Art Museum) and make use of the extensive holdings of medieval facsimiles in Special Collections.
Instructor(s): C. Lakey
Area: Humanities.

AS.010.626. Ceremonial, Diplomacy, and Gift-Giving in Ottoman Visual Culture.

AS.010.631. Biography and African American Subjects from the 19th and 20th Centuries.
This course will read through contemporary biographical treatments of prominent 19th and 20th century African American writers to explore the prominent ideological predispositions as well as the structure of archival sourcing in the creation of life-writing on black subjects. Students will make research trips to the Library of Congress, the University of Delaware, Morgan State University and other local archives for instruction in research methodology and the collection of primary source materials. Student final projects will use primary archival sources to intervene in debates about the interpretation of historical subjects and historical events.
Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.

AS.010.633. Biography and African American Subjects from the 19th and 20th Centuries.

AS.040.601. Italian Renaissance Humanism and Modern Humanities.
This course will reflect on certain key moments in the development of Latinate and Italian Renaissance humanism and will also include reading and discussion of certain recent landmark contributions to the history of the modern humanities.
Instructor(s): C. Celenza.

Classics

AS.040.601. Italian Renaissance Humanism and Modern Humanities.

English

AS.060.633. Biography and African American Subjects from the 19th and 20th Centuries.
This course will read through contemporary biographical treatments of prominent 19th and 20th century African American writers to explore the prominent ideological predispositions as well as the structure of archival sourcing in the creation of life-writing on black subjects. Students will make research trips to the Library of Congress, the University of Delaware, Morgan State University and other local archives for instruction in research methodology and the collection of primary source materials. Student final projects will use primary archival sources to intervene in debates about the interpretation of historical subjects and historical events.
Instructor(s): L. Jackson
Area: Humanities
Writing Intensive.
**Film and Media Studies**

**AS.061.396. Modern Paris on Film. 3.0 Credits.**
This course uses French film to examine the history of twentieth-century Paris. We will consider how filmmakers interpreted the social, political, and technological transformations that shaped Paris in the modern era, treating movies as expressions of change and means by which filmmakers comment on it. Taught in English. $50 lab fee.
Instructor(s): L. Mason
Area: Humanities.

**AS.061.397. French Masculinities. 3.0 Credits.**
Examines changing ideals of masculinity in France after 1960 as they found expression on film, rooting the work of iconic stars and directors in their cultural, political and historical contexts.
Instructor(s): L. Mason
Area: Humanities
Writing Intensive.

**AS.061.421. History and Film. 3.0 Credits.**
How do films inform, shape, or fundamentally alter our sense of the past? What are the strengths and limitations of cine-history? This course pairs traditional and avant-garde fiction films and documentaries with essays about history, historiography, memory and the political uses of the past to investigate fast-changing relationships between image and text, film and history. Lab fee: $50 Counts toward 300 or 400-level critical studies requirement.
Instructor(s): L. Mason
Area: Humanities
Writing Intensive.

**Anthropology**

**AS.070.290. Modern South Asia: Bangladesh/Pakistan. 3.0 Credits.**
Bangladesh and Pakistan, two major regional players in South Asia, originate in the 1947 Partition of India and shared nationhood between 1947 and 1971, ending with the War of Independence in 1971 in which Bangladesh separated from Pakistan. Since that time the two nation-states have been on different paths that have sometimes mirrored each other. This course brings together contemporary works of national histories, social movements and cultural production to consider the politics of self-differentiation and the points of convergences.
Instructor(s): N. Khan
Area: Humanities, Social and Behavioral Sciences.

**AS.070.318. The Atlantic World. 3.0 Credits.**
This seminar explores the formation of the South Atlantic through a reading of historical and ethnographic texts. We examine the making of history and culture as contentious fields of struggle.
Instructor(s): A. Angelini
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.070.352. Evolution, Ecology, Becoming. 3.0 Credits.**
The concept of evolution is central to social theory. Originating in the question of the species, it has moved into questions of human ecology, cultural forms and modes of thought. While it remains a deeply contested, often criticized concept, particularly in its neo-Darwinian manifestation, it orients anthropological thinking in ways that are as yet to be examined. Reaching into the archives of anthropology and other cognate disciplines, this course will examine the writings of Lyell, Darwin, Marx, Morgan, Boas, Steward, Bateson, Ingold among others. Co-listed with AS.070.610
Instructor(s): A. Goodfellow, N. Khan
Area: Humanities, Social and Behavioral Sciences.

**AS.070.605. Anthropology and the Everyday.**
Analysis of the everyday groans under the theoretical weight of concepts such "modernity," "governmentality," "capitalism," "globalization" and more recently "security." What might a sharper focus on the everyday yield in terms of its own analytical frameworks and empirical descriptions? We read some contemporary greats (Foucault, Derrida, Cavell, de Certeau, Lefebvre). Simultaneously we look at how each has been received within ethnography by reading anthropologists in engagement with them (Mahmood, Ivy, Das, Siegel, Harvey). We ask what critical stakes anthropology maintains in relation to the everyday.
Instructor(s): N. Khan
Area: Humanities, Social and Behavioral Sciences.

**Near Eastern Studies**

**AS.130.126. Gods and Monsters in Ancient Egypt. 3.0 Credits.**
To provide a basic introduction to Egyptian Religion, with a special focus on the nature of the gods and how humans interact with them. We will devote particular time to the Book of the Dead and to the "magical" aspects of religion designed for protective purposes.
Instructor(s): R. Jasnow
Area: Humanities.

**AS.130.243. Hammurabi in the Digital Age: Digital Humanities and the Ancient Middle East. 3.0 Credits.**
The world’s earliest poetry, cities, and empires all hail from the ancient Near East, but the remains of its remarkable cultures are under direct threat by the current conflicts in the Middle East. Digital technologies can help us to study, preserve, and recreate the artifacts that remain, and this class combines the use of such technologies with the study of the ancient world, offering students the chance to critically engage with modern scholarship methods and create their own digital resources, as well as gain familiarity with key themes and features of the ancient Near East, including urbanization, internationalism, and literature.
Instructor(s): M. Lewis
Area: Humanities.

**History of Science Technology**

**AS.140.105. History of Medicine. 3.0 Credits.**
Course provides an overview of the medical traditions of six ancient cultures; the development of Greek and Islamic traditions in Europe; and the reform and displacement of the Classical traditions during the Scientific Revolution.
Instructor(s): G. Pomata
Area: Humanities, Social and Behavioral Sciences.

**AS.140.146. History of Public Health in East Asia. 3.0 Credits.**
This course examines the history of disease, epidemics, and public health responses in East Asia from the 17th-20th centuries. This public health history emphasizes the interactions, connections, and comparisons among China, Japan, Korea, and Taiwan.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
**AS.140.313. Psychopolitics: Science, Mind, and Society. 3.0 Credits.**
This course explores the history of psychiatry and the mind sciences as social and political institutions in the United States, from the country's founding to the present. Each class meeting will explore a set of "alternative facts" emerging in the setting of a landmark political dispute in US history. Students will read, discuss, and research claims made by competing scientific experts about who should participate in American society and to what extent. Overall, the course is geared toward students interested in making sense of the exchange between scientific knowledge and social politics.
Instructor(s): S. Scharff
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.140.322. Follow the money: Science, technology, and the 'knowledge economy,' c.1800-present. 3.0 Credits.**
This course examines the historical emergence of knowledge-driven economies, paying special attention to the funding, development, and use of science and technology for commercial purposes.
Instructor(s): J. Mercelis
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.140.381. History of Reproduction. 3.0 Credits.**
This course investigates the history of reproduction in American medicine, science, politics, and culture. It explores changing ideas about reproductive bodies, sexuality, and the family as well as practices of contraception, conception, and childbirth.
Instructor(s): B. Gurtler
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.140.413. The White Plague: History of Tuberculosis. 3.0 Credits.**
Examination of interrelated scientific, medical, social, and cultural dimensions of tuberculosis from early modernity to the present in various geographical and cultural settings. Extensive reading, research based on primary sources. Juniors and Seniors only. Instructor’s permission for all others. Cross-listed with History and Anthropology.
Instructor(s): D. Todes
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.140.441. Metaphor in Science and Medicine. 3.0 Credits.**
Science and medicine are permeated by metaphors. Generated by every domain of human experience, these metaphors embed scientific and medical thought in historically specific times, places, experiences, issues, attitudes and cultures. We will explore the dynamics of metaphorical thinking and examine such specific examples as "The Great Chain of Being" Darwin's "struggle for existence" and "natural selection," the "reflex" from Descartes to Pavlov to cybernetics, body and mind as clock, factory and computer; illness as imbalance and invasion, and the metaphorical associations of tuberculosis and cancer.
Instructor(s): D. Todes
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.140.674. Science and Medicine in Early Modern Atlantic World Culture.**
How were changes in scientific and medical ideas reflected in cultural products of the early modern Atlantic world? We will study these ideas as they appeared in literary genres such as poetry, utopias, natural histories and travel narratives. Likewise, we will examine the visual culture of the Atlantic space for clues about changing conceptions about the natural world. Our expedition will encompass Anglophone, French and Hispanic regions, and will pay careful attention to hybrid cultural products that reflect the interaction between indigenous cultures and the (changing) European understanding of the natural world.
Instructor(s): M. Portuondo.

**Islamic Studies**

**AS.194.201. Jews, Muslims, and Christians in the Medieval World. 3.0 Credits.**
The three most widespread monotheisms have much more in common than is generally portrayed: a common founding figure, a partly shared succession of prophets, closely comparable ethical concerns and religious practices, a history of coexistence and of cultural, religious, social and economic interaction. This course will focus on a number of key texts and historical events that have shaped the relationships between Jews, Muslims, and Christians during the Middle Ages and contributed to their reciprocal construction of the image of the "other." The geographical center of the course will be the Mediterranean and the Near and Middle East, a true cradle of civilizations, religions, and exchange.
Instructor(s): G. Ferrario.

**German Romance Languages Literatures**

**AS.211.202. Freshman Seminar: A Thousand Years of Jewish Culture. 3.0 Credits.**
This course will introduce students to the history and culture of Ashkenazi Jews through their vernacular, Yiddish, from the settlement of Jews in German-speaking lands in medieval times to the present day. Particular emphasis will be placed on the responses of Yiddish-speaking Jews to the challenges posed by modernity to a traditional society. In addition to studying a wide range of texts—including fiction, poetry, memoir, song, and film—students will learn how to read the Yiddish alphabet, and will prepare a meal of traditional Ashkenazi dishes. No prior knowledge of Yiddish is necessary for this course.
Instructor(s): B. Lang
Area: Humanities.

**AS.211.265. Panorama of German Thought. 3.0 Credits.**
This course explores the rich terrain of German literature and philosophical thought, from Kant to today. At each meeting, we will investigate canonical texts of the German intellectual tradition, with an eye to discovering their unity as "German" philosophical and cultural artifacts and icons, as well as with an interest in establishing their well-deserved place in the wider, global discourses of world literature. In this way, we will learn to think critically in and with these important literary and philosophical texts from German-speaking lands as a means of viewing and appreciating the full panorama of German thought. Among authors read and discussed will be Kant, Goethe, Schiller, Hegel, Kleist, Heine, Fontane, Nietzsche, Freud, Kafka, Heidegger, Mann and Bernhard. Readings and discussion will be in English. German is appreciated but not required.
Instructor(s): M. Dornbach
Area: Humanities
Writing Intensive.
**AS.211.328. Berlin Between the Wars: Literature, Art, Music, Film. 3.0 Credits.**

Explore the diverse culture of Berlin during the heyday of modernism. During the Weimar Republic, Berlin became a center for theater, visual arts, film, music, and literature that would have an outsized impact on culture throughout the world and the twentieth century. The thinkers, artists, and writers drawn to interwar Berlin produced a body of work that encapsulates many of the issues of the period: the effect of the modern city on society; "the New Woman"; socialist revolutionary politics; the rise of the Nazis; and economic turmoil. While learning about interwar Berlin's cultural diversity, we will take a special look at works by Jewish writers and artists that engage with the question of ethnic, religious, and national identity in the modern world, specifically in the context of Berlin's rich Jewish history and the rise of anti-Semitism in the interwar period. All readings will be in translation.

Instructor(s): S. Spinner
Area: Humanities.

**AS.211.341. Power and Resistance in French Political Thought. 3.0 Credits.**

Even as a strong, divine-right monarchy emerged in France, following the Renaissance wars of religion, rebellious French thinkers never stopped questioning the foundations of power. They focused critically not only on the claims of authority issuing from the top, but also on the submissiveness of the governed and the reach of propaganda. This course examines how power shapes minds and bodies, from absolutism to the Revolution, to democratic laïcité. Readings include works by La Boétie, Montaigne, Loyseau, Bayle, Rousseau, Saint-Just, Maistre, Tocqueville, Foucault, Lefort, Rancière and the Assemblée Nationale. Readings and discussion in English.

Instructor(s): E. Russo
Area: Humanities

**AS.211.394. Brazilian Culture & Civilization. 3.0 Credits.**

The course is taught in English. No knowledge of Portuguese is required. This course is intended as an introduction to the culture and civilization of Brazil. It is designed to provide students with basic information about Brazilian history, art, literature, popular culture, theater, cinema, and music. The course will focus on how indigenous Asian, African, and European cultural influences have interacted to create the new and unique civilization that is Brazil today. The course is taught in English, but ONE extra credit will be given to students who wish to do the course work in Portuguese. Those wishing to do the course work in English for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. The sections will be taught simultaneously. Section 01: 3 credits Section 02: 4 credits (instructor's permission required)

Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.

**AS.211.449. America Through French Eyes: French Travellers to America. 3.0 Credits.**

From early colonial efforts in the sixteenth century through the time of the great political revolutions and down to the present, America has exercised a deep fascination on the French. This course will look at French representations of America in art, literature and political thought across the centuries. Through a range of materials including travel accounts, essays, novels, maps, paintings and film, we will investigate how French perceptions of America have shifted over time, often in response to changes in French society and culture. All texts will be read in translation. Course work will include visits to JHU's Special Collections and the Walters Art Museum downtown.

Instructor(s): S. Miglietti
Area: Humanities

**AS.211.479. Dante's Journey through the Afterlife. 3.0 Credits.**

Dante's Divine Comedy presents a complete picture of the medieval world-view in all its aspects: physical (the structure of the cosmos), historical (the major actors from Adam to Dante himself) and moral (a complete system of right and wrong). Dante shows how the Christian religion portrayed itself, other religions, the nature of God, humans, angels and devils, and human society. We will explore these topics both from the viewpoint of Dante's own time, and in terms of its relevance to our own societal and cultural concerns.

Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

**AS.212.341. Power and Resistance: Approaches to French Political Thought. 3.0 Credits.**

Even as a coherent, rational conception of state power emerged in France in as early as the Renaissance, French thinkers never stopped challenging the ways by which power justified itself in order to foster obedience and consensus. In so doing, they focused critically as much on the claims of sovereignty issuing from the top as on the willingness of the governed to submit to them. The course will examine the dialectic between the legitimation and delegitimation of power, from the Renaissance wars of religion to the Revolution and beyond: the haunting fear of the corruption and death of the political body; the notion of permanent crisis; the right to revoke the social contract; the reach of power in shaping minds and bodies. Readings may include works by La Boétie, Bodin, Bayle, Rousseau, Sade, Saint-Just, Constant, Maistre, Tocqueville, Foucault, Lefort and Rancière. Readings and discussion in English.

Instructor(s): E. Russo; W. Anderson
Area: Humanities

**AS.212.699. Cultures of Criticism from the Classics to Foucault.**

From fault-finding to the crossover of aesthetic and political judgment, criticism never loses sight of its medical cognates critical and crisis. This course examines the emergence and the transformations of critical judgment in the arts, culture and politics, from the early days of its collusion with French monarchical propaganda, to the critical genealogies of the Enlightenment, to the postrevolutionary critique of history, to Foucault's critique of practices of veridiction. Works by Perrault, Bayle, Diderot, Rousseau, Tocqueville, Cassirer, Koselleck, Derrida, Barthes, Bourdieu, Foucault. Taught in English; most texts available in translation, but knowledge of French recommended.

Instructor(s): E. Russo
Area: Humanities.
AS.213.706. Literature, Museums, Mimesis.
Can museums be literary? Can literature be museal? Throughout the twentieth century and into the present, the museum has repeatedly challenged models of representation, none more so than mimesis, both as aesthetic theory and representational practice. This has been a role played by museums, both in their traditional guises as repositories of objects and — as André Malraux presciently had it — as "imaginary museums." This course will examine the larger disruption of mimesis, and more specifically literary realism, through the particular catalyzing effects of museums. We will deal with two primary museological phenomena: first, the introduction of the "primitive other" into European modernity via ethnographic museums; second, the museological commemoration and representation of trauma, specifically of the Holocaust. Special attention will be paid to discursive, formal, and rhetorical locations of overlap between the museal and the literary, including ekphrasis, linearity, volume, and collection. Readings will include fiction, poetry, and theoretical texts, as well as secondary sources examining particular museums and exhibitions. All texts in English.
Instructor(s): S. Spinner
Area: Humanities
Writing Intensive.

The course explores some aspects of the contradictory constitution of the modern subject as a subject that is split, opposed, in tension. Two archetypal figures of this split are the "bourgeois," as the social-economic subject, and the "citoyen" or "citizen," as the political subject. The bourgeois and the citizen are defined by distinct and opposing conceptions of the "will," of education (Bildung), and of the relation between law and nature, normativity and facticity. In asking how to understand the conflictual relationship between these two basic figures of the modern subject, the course will focus especially on the paradoxes of "individual rights" (subjektive Rechte) as the fundamental mechanism of modern subject-formation. How do rights both empower subjects, while also contributing to forms of their disempowerment? To what extent do rights contain and organize the tensions between subjects understood as social or economic, and as political? CLASS BEGINS FEBRUARY 25 AND ENDS APRIL 1. Readings will include excerpts from (among others): Hegel, Marx, Nietzsche, Horkheimer and Adorno, Heidegger, Foucault, Balibar and Rancière.
Instructor(s): C. Menke; R. Tobias
Area: Humanities
Writing Intensive.

AS.214.347. Petrarch and the Beginnings of the Renaissance. 3.0 Credits.
This course will focus on the life, work, and thought of Francesco Petrarca, or "Petrarch." Though known today primarily as the author of Italian love poetry, Petrarch considered his Latin work more lasting. We will explore both sides of his work, the vernacular and Latin (in English translation) to come to an understanding of his place in medieval intellectual history, the history of philosophy, and the history of literature.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.390. Machiavelli: A Renaissance Master. 3.0 Credits.
Who was Niccolò Machiavelli? The author of the Italian Renaissance's most famous book, The Prince, he also wrote histories, commentaries, comedies, and letters. And he had a career as a prominent Florentine diplomat, which ended tragically but informed everything he wrote. This course is intended to offer students an introduction to Machiavelli's major works and to the intellectual, social, and political contexts that shaped his thinking.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.437. The Intellectual World of the Italian Renaissance. 3.0 Credits.
This course is intended to familiarize students with the intellectual world of Renaissance Italy, or more specifically, the "lost" Italian Renaissance of the long fifteenth century, from the time when Petrarch (1304-74) was in full maturity to the 1520s. During this period, most Italian intellectuals wrote the majority of their work in Latin — not the Medieval Latin of the Church and the universities but in what they saw as a more authentic Latin, like that used in ancient Rome, in the time of Cicero, Virgil, Quintilian, and others. These Renaissance "humanists," inspired by the example of Roman, and eventually Greek, antiquity, believed that they were carrying out a cultural revival. Who were these humanists? Why then did they choose Latin (and a reformed Latin at that) instead of their "native" tongue as the language in which to effect this renewal? What did this choice afford them in terms of literature and philosophy? Why was this phase of literary and philosophical history undervalued in the evolution of modern scholarship? By the end of this course, you should be able to formulate answers to those questions. Some of the works of these authors still await editions, lying in manuscript libraries or difficult-to-access early printed editions. Many have now had their Latin texts edited, and a number have recently been translated into English. Students therefore have the chance to explore work in a field that is new and growing. A separate Renaissance Latin reading group will accompany the course for those who have studied Latin.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

AS.214.477. Magic, Marvel, and Monstrosity in the Renaissance. 3.0 Credits.
Magic, Monstrosity, and Marvels or Wonders call into question what we see and experience: what is reality, what is illusion; what's natural and what's supernatural? What's human and what's more, or less, than human? During the Renaissance, ideas about the nature of reality were bound up with questions and issues very different from those of our time. With the exact sciences still being invented, the nature of the world was much less hard and fast for Renaissance people than it is for the modern educated person. The literary masterpieces of the Italian Renaissance provide vivid illustrations of the early modern sense of wonder. Foremost among these are the theatrical comedies which Italian authors revived in imitation of the ancients, and the romances, especially Ariosto's Orlando furioso (1532) and Tasso's Gerusalemme liberata (1581). These and other works influenced ideas about magical and marvelous phenomena across Europe for centuries to come. Works will be read and discussed in English. Italian majors and graduate students (who should enroll in section 2) will attend a weekly supplemental discussion in Italian and compose their written work in Italian.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.
AS.214.479. Dante Visits the Afterlife: The Divine Comedy. 3.0 Credits.
Dante’s Divina commedia is the greatest long poem of the Middle Ages; some say the greatest poem of all time. We will study the Commedia critically to find: (1) What it reveals about the worldview of late-medieval Europe; (2) how it works as poetry; (3) its relation to the intellectual cultures of pagan antiquity and Latin (Catholic) Christianity; (4) its presentation of political and social issues; (5) its influence on intellectual history, in Italy and elsewhere; (6) the challenges it presents to modern readers and translators; (7) what it reveals about Dante’s understanding of cosmology, world history and culture. We will read and discuss the Commedia in English, but students will be expected to familiarize themselves with key Italian terms and concepts. Students taking section 02 (for 4 credits) will spend an additional hour working in Italian at a time to be mutually decided upon by students and professor.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.637. The Intellectual World of the Italian Renaissance.
This course is intended to familiarize students with the intellectual world of Renaissance Italy, or more specifically, the "lost" Italian Renaissance of the long fifteenth century, from the time when Petrarch (1304-74) was in full maturity to the 1520s. During this period, most Italian intellectuals wrote the majority of their work in Latin – not the Medieval Latin of the Church and the universities but in what they saw as a more authentic Latin, like that used in ancient Rome, in the time of Cicero, Virgil, Quintilian, and others. These Renaissance "humanists," inspiring by the example of Roman, and eventually Greek, antiquity, believed that they were carrying out a cultural revival. Who were these humanists? Why then did they choose Latin (and a reformed Latin at that) instead of their "native" tongue as the language in which to effect this renewal? What did this choice afford them in terms of literature and philosophy? Why was this phase of literary and philosophical history undervalued in the evolution of modern scholarship? By the end of this course, you should be able to formulate answers to those questions. Some of the works of these authors still await editions, lying in manuscript libraries or difficult-to-access early printed editions. Many have now had their Latin texts edited, and a number have recently been translated into English. Students therefore have the chance to explore work in a field that is new and growing. A separate Renaissance Latin reading group will accompany the course for those who have studied Latin.
Instructor(s): C. Celenza
Area: Humanities
Writing Intensive.

Giambattista Vico's Principi di scienza nuova d'intorno alla comune natura delle nazioni (1725, 1730, 1744) was intended to found an "ideal" and "eternal" model of human development, valid for all societies. Vico considered his project both philology and philosophy, and tried to revolutionize thinking about human history as practiced between about 1550 and 1700, by exposing misconceptions behind attempts to square "sacred history" (the presumed historical accuracy of the Bible) with "profane" or non Judeo-Christian concepts of history, both ancient and modern. The culture shock underlying this "old science" stimulated Vico to base philosophical and historical knowledge of mythology on a conception of narration. Recommended Course background: Italian and Latin
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

The readings bring into consideration the question of terror (of war) and displacement as experienced by migrants in novels by prize winning authors such as Arguedas, Vargas Llosa, Alarcon, Riesco, Roncaglio and Silva Passuni.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.350. Mexico: A cultural history from the Olmecs to the Mexican revolution of 1910. 3.0 Credits.
The offers a survey of Mexican culture from the formative years of the Olmecs (2000 b.c.) to the Mexican revolution of 1910. History of ideas, matrix social formations, art and literature are the focus of this historical overview.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.406. Novelist Intellectuals. 3.0 Credits.
What does a novelist's op-ed about economics have to do with her literary writing? In what ways does a fiction writer's essays on the environment inform how we read her novels? What happens when we find the political opinions of a writer objectionable? This undergraduate seminar will consider what the Spanish writer Francisco Ayala termed "novelist intellectuals," that is, literary writers who actively participate in a society's public sphere. Considering writers from Madrid to New York, from London to Buenos Aires, we will ask how one should hold a novelist's fictional and non-fictional writings in the balance and explore ways of reading that allow us to consider the public intellectual side and the aesthetic side of a novelist together.
Instructor(s): B. Seguin
Area: Humanities.

AS.215.413. Cuba y España. 3.0 Credits.
La frase "más se perdió en Cuba" alude al singular rango de la antigua Provincia de Ultramar en el mapa geopolítico del colonialismo hispánico. Hemos de estudiar la prolongada relación entre España y Cuba, desde 1492 al presente, a través de materiales literarios, crónicas, artes plásticas, música y medios sociales al corriente. Enseñado íntegramente en español.
Prerequisites: AS.210.311
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.452. Che Guevara and Magical Realism. 3.0 Credits.
His detractors often compare him to Hitler while many of his admirers see in him a saint and a martyr like Jesus Christ. Cuban school children are taught to be like him. Che was killed in 1967, the same year in which Gabriel García Márquez published Cien años de soledad (One Hundred Years of Solitude). We will study Guevara's life as a militant revolutionary through his own writings and the exorbitant style known as realismo mágico, crafted by García Márquez, one of Che's great admirers. Four movies will anchor our visual take on the myth and the man: Los diários de motocicleta (Walter Salles, 2004), Che I and Che II (Steven Soderbergh, 2008), and Wall Street (Oliver Stone, 1987). The nineteen-eighties narcotraffic boom in Colombia and the cocaine-driven financial high times during the late Reagan years will frame our study. Taught in Spanish
Instructor(s): E. Gonzalez
Area: Humanities.
AS.215.490. Reading Ancient Mexico Today: Amoxtli, Tlacuilos and the Florentine Codex. 3.0 Credits.
This course offers an in depth study of "Mexican" writing systems before and after the Spanish Conquest in 1521. Special emphasis is placed on the role of the tlacuilos--nahuatl intellectuals-- in the writing of the Florentine Codex (1584), the largest surviving compendium on pre-colonial Mexico.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.646. The Narrative of Conquest in the Andes, 1530 - 1680.
Departing from narratology and the perspective of post-colonial studies, the course will analyze the narrative of conquest as developed by Cieza de Leon, Garcilaso de la Vega, Inca, Guaman Poma, Jose de Acosta and William Prescott.
Instructor(s): L. McGrath
Area: Humanities, Social and Behavioral Sciences.

Sociology
AS.230.166. Chinese Migration in Modern World History 1500's-2000's. 3.0 Credits.
This interdisciplinary course applies theories of economic sociology to examine the effects of Chinese overseas migration on modern world economy from the sixteenth century to the contemporary era. It examines the contribution of overseas Chinese to the development of capitalism in the following junctures: the East-West economic integration in the pre-modern era, China's modern transformation after the Opium War (1839-1842), the making of US national economy in the early twentieth century, as well as the postwar economic miracles in the Pacific Rim, among others. Special Note: Fulfills History requirement for GSCD track students.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.377. Colonialism and Anti-Colonialism. 3.0 Credits.
This seminar examines the theories and historiography of colonialism and anti-colonial movements. It focuses on the establishment of the colonial division of labor, comparative colonialism, identity formation, and nationalism as well as anti-colonial movement.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

Comparative Thought and Literature
AS.300.139. Introduction to Intellectual History. 3.0 Credits.
This course offers a conceptual and historical introduction to Intellectual History. What makes the "history of ideas" different from the history of other objects? What, if anything, distinguishes the history of ideas from the history of philosophy? What is it exactly that we call "ideas"? In what sense do they have a history? These are examples of the kind of questions addressed in the course.
Instructor(s): P. Marrati
Area: Humanities.

Humanities Center
AS.300.228. Brain and Society. 3.0 Credits.
On April 2, 2013, President Obama unveiled the Brain Activity Map Project, a 100 million dollar investment to map the single-celled neurons composing the human brain. Scientific in its aim, the project is culturally significant as well. Popular websites lumosity.com and neuronslearning.com offer brain-exercises to boost intelligence, while the emergent academic fields neurophilosophy, neuroethics, and neurohistory borrow from the brain sciences. The interaction between the brain and society, however, is by no means new. In this course, we will investigate the origins of brain maps and trace their reception in nineteenth-century European and American literature, philosophy, and politics. Topics include phrenology, the nervous system, psychopathology, and brain localization, and these fields' resonance in German Idealism, Victorian literature, French anthropology, and American fiction. The course is reading intensive.
Instructor(s): O. Ophir
Area: Humanities, Social and Behavioral Sciences.

Comparative Thought and Literature
AS.300.311. Introduction to Intellectual History. 3.0 Credits.
This course offers a conceptual and historical introduction to Intellectual History. What makes the "history of ideas" different from the history of other objects? What, if anything, distinguishes the history of ideas from the history of philosophy? What is it exactly that we call "ideas"? In what sense do they have a history? These are examples of the kind of questions addressed in the course.
Instructor(s): L. McGrath
Area: Humanities, Social and Behavioral Sciences.

AS.300.365. Desire in the Fin de siècle. 3.0 Credits.
This course examines the obsession with desire at the turn of the 20th century in literature, drama, philosophy and social thought and its implications for notions of self and community in modernity. We will read comparatively across European, Russian and American cultures, including Stoker’s Dracula, Hamsun’s Hunger, plays by Chekhov, Strindberg, Ibsen, Wilde, and stories by Tolstoy, Gorky, Chopin and Larsen.
Instructor(s): A. Eakin Moss
Area: Humanities
Writing Intensive.

AS.300.383. History of Madness from the Bible to DSM-V. 3.0 Credits.
Madmen, lunatics or the insane, have seen an extraordinary variety of responses and attitudes across the centuries. Whether seen as a “true” phenomenon or as socially constructed “madness” was defined and treated, examined and controlled, diagnosed and “cured” according to the spirit of the time. This course will follow the varied social imageries of “madness” throughout Western history, from the Bible to the contemporary and controversial Diagnostic Statistical Manual (DSM) in its most recent 5th edition. Alongside primary texts by Hippocrates, Avicenna, Pinel, and Freud and secondary texts by Michel Foucault, Ian Hacking, Edward Shorter, and Elaine Showalter, among others, we will acquaint ourselves with first-person accounts of “madness” and its different forms of treatment, ranging from lunatic asylum, through electric-shock treatments and lobotomies to psychoanalysis. The course will explore the interaction between the historical and social, scientific and political as well as economical factors that have shaped the views of “madness” and its treatment.
Instructor(s): O. Ophir
Area: Humanities.
East Asian Studies

AS.310.106. Introduction to Korean History and Culture. 3.0 Credits.
This course offers a comprehensive overview of Korean history and culture from ancient times to the modern era. Through primary, secondary, and audio-visual sources, students will become familiar not only with the overall contours of the entirety of Korean history, but also with its cultural and religious legacy. The course combines lectures and class discussions.
Instructor(s): Staff
Area: Humanities

AS.310.108. Introduction to Chinese Fiction and Drama. 3.0 Credits.
This course will introduce Chinese fiction and drama from the Tang dynasty (618-906) to the early Republican period (1911-1949), such as the romantic dramas of Tang Xianzu and the uncanny tales of Pu Songling. Students will draw connection between these vibrant literary genres and the cultural and socio-historical events that shaped imperial China. Key topics include story-telling, romance, urban culture, gender, reincarnation, and many more. Students will acquire skills in how to read, analyze and discuss the rich legacy of Chinese fiction and drama in translation and to think critically about these writings. Reading materials are all in English.
Instructor(s): J. Bandy
Area: Humanities Writing Intensive

Program in Latin American Studies

AS.310.308. The Frontier in Late Imperial China. 3.0 Credits.
The tremendous expansion of Chinese frontiers during the late imperial period forced the state and those who lived within it to grapple with complex problems of governance, ethnicity, and the geographic extent of "China". Issues and concerns associated with the massive Chinese frontiers have extended into the present; hence, no one can appreciate the current problems plaguing China's northwestern, southwestern, or coastal regions without an understanding of its historical antecedents. This seminar is designed to introduce major scholarly works and theoretical frameworks on the Chinese frontier.
Instructor(s): G. He; J. Andreas
Area: Social and Behavioral Sciences

AS.310.402. Labor Politics in China. 3.0 Credits.
This course explores the transformation of labor relations in China over the past century. It will cover the origins of the labor movement, the changes brought about by the 1949 Revolution, the industrial battles of the Cultural Revolution, the traumatic restructuring of state-owned enterprises over the past two decades, the rise of private enterprise and export-oriented industry, the conditions faced by migrant workers today, and recent developments in industrial relations and labor conflict. The course is designed for upper division undergraduates and graduate students. Cross-listed with Sociology and International Studies (CP).
Instructor(s): G. He; J. Andreas
Area: Social and Behavioral Sciences Writing Intensive

AS.310.201. Freshman Seminar: Korean History through Film and Literature. 3.0 Credits.
In this course, students will engage with select topics in Korean history from premodern and modern times and examine how the past has been represented through various forms of film and literature. This will be combined with readings of academic articles to allow students to gauge the distance between scholarship and cultural expressions of history. Through this, students will be introduced to the highly contested and often polarizing nature of Korean history and the competition surrounding historical memory.
Instructor(s): Staff
Area: Humanities

AS.310.301. Documentary Photography in a Changing China. 3.0 Credits.
This course aims to inspire students to explore the impacts, meanings, and explanations of social transformation in contemporary China, via the lens of documentary photography. The photographic images of selective topics will include the products of photojournalism and documentary photography, and several documentary films, by both Chinese and non-Chinese photographers. While one picture is worth thousand words, one picture may also provoke countless interpretations. Students are strongly encouraged to read broadly about different aspects of social transformations in contemporary China, and to select and curate their own subjects of photo images. The spirit of comparative study of documentary photography of China and other parts of world will be strongly encouraged. Active class participation is imperative. A small exhibition on the campus will be organized by the Spring semester. The course is designed for upper division undergraduates. Cross-listed with Sociology and International Studies (CP).
Instructor(s): G. He
Area: Social and Behavioral Sciences
AS.361.207. Afro-Latin American Biography. 3.0 Credits.
In this course, we will examine biographical accounts of men and women of African descent in Latin America and in the broader Black Atlantic. These individuals include conquistadors and slaves, saints and sinners, revolutionaries and ordinary people. In their life stories, we will not only examine questions of race, gender, and religiosity that were central to the construction of identity in the early modern Atlantic world, but also the nature of the sources that allow us to tell their stories.
Instructor(s): J. Clark
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.361.410. Colombia and Venezuela: Postcolonial History and the European Novel. 3.0 Credits.
The intertwined histories of Colombia, Venezuela, Panama, and the Caribbean studied in two novels: Joseph Conrad's Nostromo (1904) and Juan Javier Vázquez's The Secret History of Costaguana (2007). Other novelists include Rómulo Gallegos (Doña Bárbara, 1929); Alejo Carpentier (The Lost Steps, 1953), and Gabriel García Márquez (The General in his Labyrinth, 1989).
Instructor(s): E. Gonzalez
Area: Humanities.

Center for Africana Studies
AS.362.112. Introduction to Africana Studies. 3.0 Credits.
Introduction to the core concepts, theories, cultural and intellectual production across the black diaspora. Antiracist, queer, and insurgent black thought welcome here.
Instructor(s): J. Johnson
Area: Humanities, Social and Behavioral Sciences.

AS.362.122. History of Africa (since 1880). 3.0 Credits.
An introduction to the African past since 1880.
Prerequisites: Students are not allowed to take both 100.122 and 362.122.
Instructor(s): K. Gallon
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.362.175. Freshman Seminar: Remembering the Black Power Movement. 3.0 Credits.
This course explores trends, developments, contradictions, and dilemmas related to the Black Power Movement. The objective of studying this historical movement is not to engage in nostalgia, but to think through and learn the lessons of this historic social movement. An active participant in the Black Power Movement as a university undergraduate and graduate student, I do not approach this subject merely as a set of interesting intellectual issues and dynamics that can be explored with complete dispassion and objectivity. Rather, I seek to examine critically some of the contradictions and dilemmas that I, too, was caught up in, seeking to come to grips with and clarify my own participation and activities. We study these historical events with the expectation of making a positive contribution to the future.
Instructor(s): F. Hayes
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.362.340. Power and Racism. 3.0 Credits.
This course investigates the impact of white supremacy and anti-black racism, as a global system of power, on the political development of the United States of America.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.

AS.362.450. Critical Thinking in Africana Studies. 3.0 Credits.
This seminar examines various ideas, theories, and practices of thinkers, writers, and activists whose work and practices have constituted an Africana Studies intellectual tradition. The purpose of this seminar is to teach students to read, think, and write critically about questions relative to the formation and history of Africana thought and its intellectual tradition, in particular, and the genealogy of thought and intellectual traditions, in general. We will also think about various fields of knowledge that have shaped Africana Studies. The seminar therefore will work through the different meanings of intellectual work and critical thought and theory in Africana Studies.
Instructor(s): F. Hayes
Writing Intensive.

Study of Women, Gender, Sexuality
AS.363.201. Introduction to the Study of Women, Gender, and Sexuality. 3.0 Credits.
This course offers an introduction into the fields of Women's Studies, Gender Studies, and Sexuality Studies. It explores why we need these fields of inquiry, how they have emerged historically, what some of the major and most interesting contributions are and where we might go from here. The course is meant as a preparation for the other WGS core courses.
Instructor(s): K. Pahl
Area: Humanities, Social and Behavioral Sciences.

Program in Museums and Society
AS.389.201. Introduction to the Museum: Past and Present. 3.0 Credits.
This course surveys museums, from their origins to their most contemporary forms, in the context of broader historical, intellectual, and cultural trends including the social movements of the 20th century. Anthropology, art, history, and science museums are considered. Cross-listed with History and History of Art.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.275. Interpreting Sites & Collections: An Introduction to Museum Education. 3.0 Credits.
Part public history, part introduction to museum practices, this hands-on course explores how heritage areas and museums serve communities through interpretation. Each year, students partner with a community to develop research-based, visitor-centered interpretive material, in the 2015 Baltimore National Heritage Area. Field trips and community meetings will be a significant part of the course. Cross-listed with History and History of Science. M&S practicum course. Class usually meets 1:30 - 3:50 except for days with field trips.
Instructor(s): E. Maloney
Area: Humanities, Social and Behavioral Sciences.

AS.389.301. Curating Material Culture for the Digital Age. 4.0 Credits.
JHU pioneered the concept of the modern research university in the United States, but what does that mean for the everyday experiences of its students, faculty, staff and friends? Excavate the history of this place through the things collected, made and used here since the university's founding in 1876. Students research the material culture of Johns Hopkins and present their findings on an interactive website: collectionsweb.jhu.edu. Course includes digital media labs. Cross-listed with History and History of Science. M&S practicum.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.
AS.389.302. The Virtual Museum. 3.0 Credits.
Course draws on both classic readings in material culture and emerging theories of the digital to consider how the internet has changed objects and the institutions that collect, preserve, display and interpret them. Students will contribute to an established virtual museum and create their own.
Instructor(s): J. Kingsley
Area: Humanities.

In 1857 Baltimore's historic George Peabody Library was born, one of America's first public libraries. This course studies its history, rare book collections, and foundational role in Baltimore's cultural history.
Instructor(s): E. Havens
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.356. Halls of Wonder: Art, Science, and Literature in the Age of the Marvelous, 1500-1800. 3.0 Credits.
Explore the material culture of "wonder" from the Renaissance to the Enlightenment in literature, science, and art, with Hopkins' rare book collections and the Walters Art Museum. M&S practicum course. Cross-listed with GRLL, History, and History of Art.
Instructor(s): E. Havens
Area: Humanities.

AS.389.357. Heaven on Earth: Art, Culture and Wonder in the Vatican Museum and Library. 3.0 Credits.
This interdisciplinary course will explore the institutional, cultural, artistic and architectural history of St. Peter's and the Vatican Museum and Library from Antiquity through the Renaissance, up to the present day. Class meets in the Dick Macksey Seminar Room of the Brody Learning Commons. Cross-listed with History.
Instructor(s): E. Havens
Area: Humanities.

AS.389.376. Enslaved at Homewood: Slavery in 19th Century Maryland. 3.0 Credits.
Students consider the representation of slavery in historic house museums of the late 20th century through the present, and use the university's Homewood Museum as a laboratory for the development, production and mounting of an exhibit about the men, women and children who labored at Homewood in the nineteenth century. Museums and Society Practicum course.
Instructor(s): A. Schreiber
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.450. Readings in Material Culture. 3.0 Credits.
Objects, things, "stuff" - this seminar will pursue classic texts and emerging methodologies to explore the myriad ways materials and materiality have been theorized across disciplines. For graduate/advanced undergraduate students.
Instructor(s): E. Rodini; R. Brown
Area: Humanities.

AS.389.650. Readings in Material Culture.
Objects, things, "stuff" - this seminar will pursue classic texts and emerging methodologies to explore the myriad ways materials and materiality have been theorized across disciplines. For graduate/advanced undergraduate students.
Instructor(s): E. Rodini; R. Brown
Area: Humanities.

History of Art
http://arthist.jhu.edu/

Supporting a proud tradition of excellence in humanities scholarship and teaching, Johns Hopkins University offers students a diverse range of resources and opportunities for the study of art history. Courses are taught by an international faculty of respected research scholars, covering many aspects of the Classical and European tradition from the ancient world into the modern era, as well as selected aspects of Near Eastern, Asian, Ancient American, trans-Atlantic and contemporary arts. Participating in small classes with opportunities for informal excursions, students integrate their direct experience of works of art with the knowledge and critical perspective gained through historical research, discussion, and debate.

Programs leading to the B.A. and Ph.D. degrees, and a B.A./M.A. program, emphasize the value of investigating works of art in their historical, intellectual, and social contexts, and enable students to deepen their understanding of cultural history through courses in other departments.

Facilities and Opportunities
Located in a metropolitan region of unsurpassed museum collections and research institutions, Johns Hopkins is well situated for the study of art history. The Baltimore Museum of Art, with its rich holdings in modern and contemporary art, African Art, and the history of prints (just to name a few of its strengths), is directly adjacent to the Homewood campus. Downtown, and only a short shuttle ride away, is the renowned Walters Art Museum, which preserves rare collections of ancient and medieval art, Renaissance, Baroque, and 19th-century painting.

Also easily accessible from Baltimore is the National Gallery of Art in Washington, D.C., which houses a world-class collection of European painting, sculpture, and graphic arts from the Renaissance to the present day. Modern art is presented in the permanent collections and exhibitions of the Hirshhorn Museum, Smithsonian American Art Museum (SAAM), and the Phillips Collection. Unique exhibitions of Byzantine and pre-Columbian art are maintained at Dumbarton Oaks Research Library, and collections of Asian, Ancient Near Eastern, and African art are housed in the Freer|Sackler and the Museum of African Art.

Meanwhile, the Sheridan Libraries of Johns Hopkins maintains its own extensive art library on the Homewood Campus, and a Special Collections department which includes, among other treasures, the Fowler Collection of treatises on architecture. Research materials in numerous regional libraries and museums, and in affiliated institutions, including the Library of Congress, are readily accessible to art history students.

Undergraduate Program
(Also see Requirements for a Bachelor's Degree (p. 7))

Because the department emphasizes the historical, cultural, and social context of art, art history is an excellent program for undergraduates interested in a broadly humanistic education as well as for those preparing for a career in the field. A departmental faculty advisor assigned to each undergraduate major helps plan individual courses of study. Undergraduates are encouraged to participate fully in all departmental activities.

Requirements for the History of Art Major
- Students must earn a "C-" or higher grade in all courses used to satisfy major requirements.
• Courses used to satisfy major requirements may not be taken satisfactory/unsatisfactory.

Three Introductory Courses, to comprise:
AS.010.101 Introduction to History of Western Art I 8
& AS.010.102 and Introduction to the History of Western Art II ()
and one of the following:
AS.010.105 Art of the Ancient Americas 3
or AS.010.110 Art of the Islamic World

Five Advanced Level Courses (010.2xx-4xx)
One course in ancient art history 3
One course in medieval art history 3
One course in renaissance/baroque art history 3
One course in modern art history 3
One course in non-western art history 3

Two 400-Level Courses, to comprise: 1
One 400-level course exploring art history's historical and conceptual bases and approaches. 2
One additional 400-level course 3

Three Additional Courses 9
Only one of these elective courses may be at the 100-level. Elective courses must be in the department or cross-listed with History of Art

Intermediate Knowledge of a Modern Foreign Language 3
Proficiency is verified by completion of courses through the second semester of the intermediate level or higher.

Total Credits 44-55

1 These courses are in addition to the five advanced subfield courses; they may not count toward fulfilling one of the subfields above.
2 Course should be taken within one year of declaring, ideally before senior year.
3 Those planning to continue to graduate school in the History of Art should discuss which language(s) to pursue with their adviser and/or the director of undergraduate studies.

Honors Program in History of Art
For graduation with honors, students must have a cumulative GPA of 3.7 or higher in History of Art and successfully complete an honors thesis.

Honors Thesis
• The honors thesis comprises a significant expansion and deepening of a paper in a 400-level seminar into a 20-25 page paper, with figures, bibliography, and any appendices constituting additional pages.
• Students pursuing honors must make a formal request to do so in conjunction with a proposed mentor via the Honors Thesis Form.
• While writing the thesis, students enroll in Honors Thesis credits (AS 010.521, 3 credits). These credits are in addition to the 13 courses of the normal major requirements and do not count as an elective or advanced course.

Sample Program of Study for Major
Freshman

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<th>Fall</th>
<th>Credits</th>
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<td>AS.010.101</td>
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<td>AS.010.102</td>
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Sophomore

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<td>Foreign language</td>
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<td>Foreign language</td>
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<td>Additional Required Intro Course (103, 105, or 110)</td>
<td>3</td>
<td>Ancient art history (AS.010.2xx-4xx)</td>
<td>3</td>
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<tr>
<td>Medieval art history (AS.010.2xx-4xx)</td>
<td>3</td>
<td>Renaiss/Baroque art history (AS.010.2xx-4xx)</td>
<td>3</td>
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<tr>
<td>400 level art history course - historical and conceptual bases and approaches</td>
<td>3</td>
<td>200-400 level art history elective</td>
<td>3</td>
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<td>Total Credits: 55</td>
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Senior

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<tbody>
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<td>Non-western art history (AS.010.2xx-4xx)</td>
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<td>Modern art history (AS.010.2xx-4xx)</td>
<td>3</td>
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<tr>
<td>200-400 level art history elective</td>
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<td>400 level art history elective</td>
<td>3</td>
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<tr>
<td>Art history course at any level</td>
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<td>6</td>
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</table>

Total Credits: 55

Requirements for the History of Art Minor
• Students must earn a “C-” or higher grade in all courses used to satisfy minor requirements.
• Courses used to satisfy minor requirements may not be taken satisfactory/unsatisfactory.

Introductory Courses
Two introductory courses chosen from the following:
AS.010.101 Introduction to History of Western Art I 4
AS.010.102 Introduction to the History of Western Art II 4
AS.010.105 Art of the Ancient Americas 3
AS.011.100 Art of the Islamic World 3

Five Advanced Level Courses (010.2xx-4xx) 15

Total Credits: 21-23

Graduate Program
The graduate program is designed to give students working toward the Ph.D. degree an encompassing knowledge of the history of art and a deep understanding of the theories and methodologies pertaining to art historical research. The program emphasizes collaborative working relationships among students and faculty in seminars. Each advanced doctoral candidate benefits from supervision by two faculty members in his or her field.

The program also fosters a close familiarity with the outstanding art treasures in the Baltimore-Washington area relevant to the student’s area of study. In addition to the rich holdings of the Sheridan Libraries of Johns Hopkins University (which include collections of rare books at Garrett Library, Special Collections at Eisenhower Library, and the George Peabody Library downtown) graduate students have access to
such research facilities as the Center for Advanced Study in the Visual Arts (National Gallery) and the Dumbarton Oaks Research Library and Collection, both in Washington, D.C.

**Admission and Financial Aid**

Applicants to the Ph.D. program in History of Art should upload and submit all required application materials and supporting documents through the online application. For information about applying to the Ph.D. program in History of Art, please see the department’s website (http://arthist.jhu.edu/graduate/admissions). Applications must be completed by December 15.

To foster close student-faculty relationships and provide for the greatest flexibility in developing each graduate student’s individual curriculum, the department strictly limits the number of students it admits each year.

Financial support for admitted students is provided in the form of tuition grants, a multi-year fellowship stipend (contingent on continued progress), and health insurance coverage, with further opportunities for advanced research and travel funding available. Students in the program may also apply for grants from the Charles Singleton Center for the Study of Pre-Modern Europe, which supports travel, conference participation, and dissertation research in Europe.

**Requirements for the Ph.D. Degree**

Students may apply for admission to the Ph.D. program with either a B.A. or M.A. degree from another institution in hand. Acceptance requires the approval of the instructors in the areas chosen by the student as major and minor fields; in the case of transfer students, acceptance may be provisional. Students entering the program must pass reading competency examinations in two languages, as determined by field of study. Although no examinations are required in any additional languages needed for specialized research in particular areas, students are expected to master these as needed, as their studies develop. Students who are not native English speakers must submit TOEFL or IELTS scores with their application.

All students entering the program, regardless of the degree they hold, must complete four full semesters of coursework and pass the required language exams before being approved to take their qualifying exams (also known as the Ph.D. exams). The art history faculty encourages students to take full advantage of offerings in other departments, and students may, if they choose, develop a minor field in another discipline. In consultation with their advisers, students who have completed their coursework, have no outstanding incompletes, and have passed the required language exams prepare for qualifying exams. All qualifying exams, regardless of the fields in which they are taken, are comprised overall of two written exams (one major field and one minor field), followed by an oral defense before the advisers and other department faculty. Exams should take place during the third (3rd) year.

After the successful completion of qualifying exams, it is expected that students will be ready to begin work towards the dissertation by formulating a proposal. Completed proposals may be submitted at any time in the calendar year and not later than three (3) months after successful completion of the qualifying exams.

When the dissertation is complete, the student must successfully defend the dissertation before a Graduate Board Orals committee consisting of three internal (department) readers and two external readers. Although consultation between candidates and their faculty advisers regarding possible exam committee members is appropriate, selection of the committee is the department’s responsibility and is not the candidate’s responsibility or prerogative.

In addition to their own studies and research, students in the Ph.D. program gain valuable pedagogical experience by serving as Teaching Assistants under a variety of faculty mentors. Students are eligible for assignment as either a Teaching Assistant (TA) or a Research Assistant (RA), at the discretion of the department, in six of the ten semesters during which they receive funding.

**Requirements for the in-process M.A. Degree**

Students entering the Ph.D. program with a Bachelor’s degree may qualify for the M.A. degree upon completion of two semesters of coursework (six graduate-level courses) and completion of the department’s language requirements, but the department does not accept students for the terminal M.A. degree as such.

**Art History Fields**

**Ancient Art**

Long associated with the study of classical archaeology, the department affords students of ancient art the opportunity work with a faculty that includes experts in Greek, Roman and Ancient Near Eastern art. Students also benefit from the close and long-standing relationship with the Departments of Classics and Near Eastern Studies. Facilities of special relevance to students of ancient art include the Johns Hopkins Archaeological Museum, located on campus inside Gilman Hall, and the extraordinary holdings of the Walters Art Museum.

**Medieval**

Ever since its founding in 1947, the department has given special emphasis to the study of medieval art, and that tradition continues with a new generation of medievalists bringing expertise in Early Christian, Islamic, Byzantine, Mediterranean, and Italian Romanesque art and architecture to the program. Students avail themselves of local expertise through the departments of History, English, and German and Romance Languages and Literatures, and frequently consult with curators at the Walters Art Museum, several of whom participate as adjunct faculty. Hopkins students may take the seminars in Byzantine art offered each year at Dumbarton Oaks, and take advantage of the extensive research library there as well. The extraordinary collections at the Walters Art Museum and at Dumbarton Oaks are especially valuable for students interested in manuscript illumination and the minor arts.

**Renaissance / Early Modern**

Another signature strength of the History of Art Department is its program in Renaissance and Early Modern Europe, where a broad faculty expertise encompasses the art and culture of Italy, Spain, and the countries of northern Europe from the fourteenth to the seventeenth centuries. Graduate students in these areas participate in the programs of the Charles Singleton Center for the Study of Pre-Modern Europe, which sponsors collaborative research abroad and brings a steady stream of world-class lecturers to Baltimore. Students also benefit from the excellent collections of Italian and northern Renaissance art at the Walters Art Museum, the National Gallery, and the Philadelphia Museum of Art.

**Modern**

At Hopkins a diverse and challenging curriculum in modern art and criticism is offered by a research faculty of international prominence, supplemented by occasional visiting scholars and museum curators.
European art from the 18th to the 21st century, American modernism, and modern art in Asia are all among the department's distinctive strengths. Students oriented toward the study of criticism and aesthetic theory can also broaden their perspective and develop their critical skills by taking courses offered through the Department of Comparative Thought and Literature and the Department of Philosophy. Distinctive collections at the Baltimore Museum of Art and at multiple places in Washington, D.C. (the Hirshhorn Museum, the Smithsonian American Art Museum (SAAM), the Freer|Sackler of the Smithsonian, the Phillips Collection, and others) provide unparalleled resources for students of modern art at all levels.

Non-Western
Relatively new in the department is the expansive field of study encompassing the art and architecture of the Ancient Near East, the Islamic world, early modern and modern South Asia, and the early modern trans-Atlantic world. Research and teaching expertise is concentrated in four faculty appointments affording students the opportunity to develop projects in specific areas of these non-Western fields, which are also well represented by the rich collections of the Walters Art Museum and the Johns Hopkins Archaeological Museum in Baltimore, the Freer|Sackler of the Smithsonian, and other museums in Washington, D.C., and Philadelphia.

For current faculty and contact information go to http://arthist.jhu.edu/people/

Faculty
Professors
Stephen J. Campbell
Henry and Elizabeth Wiesenfeld Professor: Italian Renaissance art.

Marian Feldman
W.H. Collins Vickers Chair in Archaeology, Professor of History of Art and Near Eastern Studies: Ancient Near Eastern Art

Mitchell Merback
Professor. Northern Renaissance art.

Associate Professors
Rebecca M. Brown
Associate Professor: South Asian art

Nino Zchomelidse
Associate Professor: Medieval art

Assistant Professors
Aaron M. Hyman
Assistant Professor: Early Modern Art and Art of the Spanish Empire

Christopher Lakey
Assistant Professor: Medieval art.

Ünver Rüstem
Assistant Professor. Islamic Art and Architecture.

Jennifer Stager
Assistant Professor: Greek and Roman Art

Molly Warnock
Assistant Professor: Modern art.

Faculty Emeriti
Charles Dempsey
Professor Emeritus: Renaissance and Baroque art.

Herbert L. Kessler
Professor Emeritus: Early Christian and Medieval art.

Henry Maguire
Professor Emeritus: Byzantine and Medieval art.

Teaching Faculty
Lisa Deleonardis
Senior Lecturer and Austen-Stokes Visiting Associate Professor in the Art of the Ancient Americas

Joint Appointments
Emily S.K. Anderson
Assistant Professor, Classics: Ancient Aegean art.

Betsy M. Bryan
Professor (Near Eastern Studies): Egyptian art and archaeology, Egyptology.

Chair
Marian Feldman
W.H. Collins Vickers Chair in Archaeology, Professor and Chair of History of Art, Professor of Near Eastern Studies

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.010.101. Introduction to History of Western Art I. 4.0 Credits.
A survey of painting, sculpture, and architecture from Egyptian, Greek, Roman, and medieval culture.
Instructor(s): J. Stager
Area: Humanities
Writing Intensive.

AS.010.102. Introduction to the History of Western Art II. 4.0 Credits.
A survey of painting, sculpture, and architecture from the Renaissance to the present.
Instructor(s): C. Lakey; M. Warnock
Area: Humanities
Writing Intensive.

AS.010.103. Introduction to the Art of Asia. 3.0 Credits.
A survey of the art and architecture of Asia, from the ancient world to the present and including the Indian subcontinent, China, Japan, Korea, and Southeast Asia.
Instructor(s): Staff
Area: Humanities.

AS.010.105. Art of the Ancient Americas. 3.0 Credits.
This course provides a basis for the study of ancient Americas art and architecture and a broad exposure to the issues relevant to its study. Select visual arts within the primary regions of Mexico and Central America will be emphasized. In conjunction with the Baltimore Museum of Art (BMA) and the JHU Archaeological Museum (JHAM), students will participate in on-site study of the collections.
Instructor(s): L. Deleonardis
Area: Humanities.
AS.010.110. Art of the Islamic World. 3.0 Credits.
This course is an introduction to the art of the Islamic world, covering a geography that stretches from Spain to India and a chronology that extends from the seventh century into our own time. Within this rich and varied continuum, we will look at a range of art forms—including architecture, painting, sculpture, ceramics, and calligraphy—in relation to such themes as patronage, production, function, and audience. A number of the artworks will be viewed firsthand in local collections. We will also explore the intersection of Islamic art with today’s political realities.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.114. Freshman Seminar: Mapping the Middle Ages: Sites and Destinations. 3.0 Credits.
This course is about the visual representation of built environments and geographical locations during the Middle Ages: architectural sites, cities, regions of the world, and the world itself. It surveys the full range of medieval modes of mapping, including itineraria (road maps), T-O maps, mappaemundi, and portolan charts; and explores dynamic changes in the conventions for depicting cityscapes and urban topography, from Roman antiquity to ca. 1500. In investigating this material, we will pay special attention to scientific and allegorical representations of places foreign to the culture within which they were made—an illuminated depiction of Venice from late medieval Paris; the fresco with representations of six world rulers at Qasr Amra in Jordan. Students will consider in what ways these images help us to understand pre-modern conceptualizations of geographical space, distance, ethnicity, and otherness. And to what extent did these images help shape these notions? Texts from the period, especially guidebooks and accounts written by medieval travelers, will help guide our discussion. The geographical focus of the course is Europe and the Mediterranean basin, but will include comparisons with the art of East Asia, Persia, and sub-Saharan Africa. The course includes a group visit to the Walters Art Museum.
Instructor(s): Staff
Area: Humanities.

AS.010.203. Abstraction. 3.0 Credits.
This course will examine the elaboration and dissemination of major iterations of “abstract” art at key junctures throughout the twentieth century, with an emphasis primarily on developments in Europe and the Americas. Why abstraction? What were the formal, social, and philosophical stakes of divergent models and paradigms of abstract practice? And what difference do they make in the history and theory of artistic modernism? Class visits to the BMA and Special Collections.
Instructor(s): G. Wiens
Area: Humanities
Writing Intensive.

AS.010.205. The Painted Worlds of Early Greece: Fantasy, Form and Action. 3.0 Credits.
This course explores the creation and role of early Aegean wall painting. Found primarily in palaces, villas and ritual spaces, these paintings interacted with architecture to create micro-worlds for social activities taking place in their midst. Their subjects range—from mythological to documentary, from ornamental to instructive. They depict dance and battle, fantastical beasts and daily life. We examine their complex relationship to lived reality as well as the activities that surrounded them, from their crafting, to performance of rituals, to their role in “international” relations.
Instructor(s): E. Anderson
Area: Humanities
Writing Intensive.

AS.010.207. Art, Architecture and Urban Life in Renaissance Italy. 3.0 Credits.
In recent years architectural and urban historians have begun to approach the built environment of the city not as a stage upon which an urban drama played out, but as the very medium that gave that drama form and shaped its meaning. This course aims to introduce students to the multifaceted features of the Italian Renaissance city by investigating the social and cultural history of urbanization as expressed in sculpture, painting, and architecture. We will explore a range of cities in central and northern Italy, including the major centers of Rome, Florence, Siena and Venice. A number of public works, monuments, and buildings will be discussed in a wide context informed by urban design and ritual life. Emphasis will be placed upon examining the role of works of art operating in conjunction with architecture in the shaping of public spaces and the creation of civic identities. The conditions of artistic production and the materials and techniques of painting, sculpture and architecture will also be discussed. A variety of texts will be read in conjunction with classroom analysis of visual materials in order to explore how urban spaces were lived and experienced. The course will be approached as a working seminar in which students will be expected to participate in discussions of the weekly readings, as well as conduct their own research culminating in the production of research papers.
Instructor(s): M. Warnock
Area: Humanities

AS.010.209. Art Since 1945. 3.0 Credits.
Critical survey of artworks, texts, and debates primarily in Europe and the Americas since World War II. Visits to Special Collections, the BMA, and art on Homewood Campus.
Instructor(s): M. Warnock
Area: Humanities.

AS.010.211. Monuments of Asia. 3.0 Credits.
An examination of selected architectural monuments from across Asia, including the Indian subcontinent, Southeast Asia, China, Japan, and Korea. Ancient to contemporary.
Instructor(s): R. Brown
Area: Humanities.
AS.010.212. Mirror Mirror: Reflections in Art from Van Eyck to Velázquez. 3.0 Credits.
Explores the different ways Early Modern painters incorporated mirrors and reflective surfaces into their works for the sake of illusion and metaphor, deception and desire, reflexivity and truth-telling. By transgressing the boundaries of human vision and experience, embedded mirror images often made claims about the powers of art, and the superiority of painting in particular.
Instructor(s): M. Merback
Area: Humanities.

AS.010.214. Ancient Americas in Motion. 3.0 Credits.
This course critically examines the visual arts and their makers as portrayed in documentary, historical, and Hollywood films.
Instructor(s): L. DeLeonardis
Area: Humanities.

AS.010.215. Transformations of an Empire: Power, Religion, and the Arts in Medieval Rome. 3.0 Credits.
This course investigates the impact of political, religious, and social change for the making of art and architecture in the city of Rome from Constantine the Great (ca. 274-337 CE) until 1308, when the papal court moved to Avignon. From being a thriving metropolis and the political center of an empire in a pagan, multi-ethnic society, Rome became a small town of a few thousand inhabitants dwelling in the ancient ruins under the spiritual leadership of a powerless Christian bishop and unprotected from the invasions of the migrating peoples from Eastern Europe and Central Asia. Later transformations concern the rise to political power of the popes, achieved by the military alliance with the Frankish dynasty of Charlemagne around 800, and the controversy over the superiority of power between the German emperors and the Roman popes. How did the transformation from worldly to religious power affect the architecture of public buildings in the city? What strategies were developed to visually promote the new religious leaders of the city, the popes, and the new Christian God? How did the new status of Rome as one of the most important Christian pilgrim sites with its countless bodies of Early Christian martyrs in the catacombs outside the city influence urban development? And finally, what impact did the economical ups and downs in these periods of transition have for the arts? As we try to reconstruct the ‘image’ and the appearance of medieval Rome, this course discusses ideas and concepts behind different forms of leadership, both political and religious, as they intersect with the power of the arts and the self-referential character of a city that is obsessed with its own past.
Instructor(s): N. Zchomelidse
Area: Humanities.

AS.010.218. Modern Art, 1880-1950. 3.0 Credits.
Introduction to major works and discourses of, and key debates surrounding, modernism in the visual arts of Europe and the United States. Visits to the BMA and Special Collections.
Instructor(s): M. Warnock
Area: Humanities.

AS.010.222. Representing Roman Power: Sculpture as Political Rhetoric from Republic to Empire. 3.0 Credits.
Rome created one of the world’s most powerful empires that dominated the Mediterranean from the 3rd century BCE into the 4th century CE. As Rome expanded its borders, its cities saw a proliferation of sculptural monuments that produced a visual political rhetoric and expressed imperial ideologies. This class examines the close relationship between Roman sculpture and politics from the Republic through the Severan principate. Through close visual analysis of the ancient materials and critical readings of scholarship, this course will examine the role of sculpture in the formation, reproduction, and attenuation of imperial rule.
Instructor(s): A. Miranda
Area: Humanities.

AS.010.224. The Art of Bollywood. 3.0 Credits.
This course examines Hindi cinema produced in Mumbai since the 1950s, focusing on key examples from each decade, from early narratives of navigating the big city to song-and-dance extravaganzas incorporating Indian-Americans. We will look at art represented in film, from modernist sculpture to ancient architecture. The course will also explore the billboards, cinema cards, and other ephemera associated with Bollywood, alongside contemporary artists’ appropriations of Hindi cinema. No knowledge of Hindi is required.
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

AS.010.226. Art, Medicine, and the Body: From Leonardo to Body Worlds. 3.0 Credits.
This course explores five centuries of fruitful collaboration between physicians and artists — those who observe the body in order to heal it, and those who do the same in order to picture it. From medieval medical manuscripts, where the body is portrayed as a microcosm of the created world, to the anatomical forays of Renaissance artists such as Leonardo da Vinci and Albrecht Dürer; from gruesome depictions of bodily pain, disease, and corruption in the art of Matthias Grünewald to the eloquent exposure of the body’s interior by anatomists such as Andreas Vesalius; from the spectacularization of the body in Enlightenment science to the rubberized cadavers of Gunther von Hagen’s Body Worlds project — these and other topics will bring into focus the complex intersections between the history of medicine and the history of art.
Instructor(s): M. Merback
Area: Humanities.

AS.010.228. Prophets, Kings, and Demons: The Art of Islamic Book Painting. 3.0 Credits.
Despite the widespread misconception that Islam forbids images of humans and animals, figural representation played a rich and varied role in the historical arts of the Muslim world, particularly in the form of book painting. This course explores the production and consumption of illustrated Islamic manuscripts and albums, situating the paintings in their wider artistic and social contexts. Extending in scope from the Near East to India and from the medieval to the early modern period, the course takes a thematic approach that will introduce some of the key genres of the tradition — including chronicles, fables, and religious works — and investigate broader questions of style, meaning, viewership, text-image relationships, and cross-cultural borrowing. Students will have the opportunity to look at examples of this art firsthand in local collections.
Instructor(s): U. Rustem
Area: Humanities.
AS.010.232. Medieval Art and Architecture of the Mediterranean World. 3.0 Credits.
This course explores the development of medieval painting, sculpture, and architecture in the Mediterranean region from ca. 250 to 1400. The class will focus especially on moments and sites of contact between Western European, Byzantine, and Islamic cultures and will examine the impact of cross-cultural exchange on artistic and architectural production.
Instructor(s): C. Lakey
Area: Humanities.

AS.010.236. Palaces, Temples and Tombs in Mesopotamia. 3.0 Credits.
Mesopotamia, the “land between the rivers,” is considered the cradle of civilization. Its earliest urban centers appeared by 3500 BCE in the region of modern-day Iraq, Iran, and Syria. Along with urbanism came the emergence of temples and palaces as large-scale elite institutions (along with written records). Their arts manifest some of the earliest complex representations and follow a vibrant course for several millennia. The first empires marshaled large armies and amassed fabulous riches. Complex religious and ritual ideologies were expressed in the art and architecture. And all has been revealed by the archaeologist’s spade. This class explores the art and architecture of Mesopotamia (ancient Sumer, Babylonia and Assyria) from 3500 to 330 BCE. Emphasis is placed on the relationship between the arts and ancient society in order to enable students to acquire the skills for accessing and appreciating ancient civilizations.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.251. Medieval Spaces: Site, Image, and Viewer in the Middle. 3.0 Credits.
This course serves as an introduction to medieval art by analyzing the relationships between architecture and images at holy sites from the 4th century CE through the 14th. The course will focus primarily on how those relationships structured viewers’ experiences of the divine by understanding how works functioned for specific audiences in a particular spatial context. In reviewing the origins and transformations of Christian visual culture we will investigate how site-specific image production in Western Europe and Byzantium informed social and political relations; how theological problems related to image worship affected the form and content of the visual arts; and how developments in public and private devotion altered the spaces for imagic display.
Instructor(s): C. Lakey
Area: Humanities.

AS.010.301. Art and Interactions in the Eastern Mediterranean from 2000-500 BCE. 3.0 Credits.
The Mediterranean Sea has always acted as a connector for the many great civilizations that flourished around its shores. From 2000 to 500 BCE, these interactions were particularly dynamic, resulting in a diversity of arts including painting wall frescoes, precious jewelry, and elaborate furnishings and weaponry. This course examines the arts of the interactions among the Egyptians, Near Easterners, and Greeks, considering the role of artistic products in intercultural relations.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.305. Global Modern Art: Africa, Asia, the Pacific and the Americas. 3.0 Credits.
Artists around the world grappled with the modern, working through local concerns and struggles but continually engaged with counterparts in Europe, North America, and across the “global South.” This course will introduce art, artists, movements, and institutions of modernism from approximately 1880 to the present and from outside of the northern Atlantic while critically examining the very notion of “global modernism.”
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

AS.010.307. Diplomats, Dealers, and Diggers: The Birth of Archaeology and the Rise of Collecting from the 19th c. to Today. 3.0 Credits.
The development of archaeology in the Middle East – its history of explorers, diplomats, missionaries and gentlemen-scholars – profoundly shaped the modern world, from the creation of new museums and the antiquities market to international relations and terrorism.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.310. The ‘Long Sixties’ in Europe. 3.0 Credits.
This seminar examines aspects of advanced artistic production that emerged in France, Italy, the Benelux, and German-speaking countries primarily in the years 1945-1972 as constituent elements of the “Long Sixties,” a period of extraordinary and often rapid social transformation. Among our questions: How was the work of art reimagined and repositioned in the wake of World War II and the horrors of the Holocaust, in the context of reconstruction and an emerging consumer society, and in light of the Cold War, decolonization, and other political tensions and cataclysms? How did artists conceive the claims of artistic tradition in a rapidly expanding field of aesthetic practices and possibilities? What were the relations among advanced artistic practices and the “cultural revolutions” generally taken to have come to a head ca. 1968? Integral to this course is a student-curated exhibition of avant-garde materials at the MSE Library, to open in November 2018.
Instructor(s): M. Warnock
Area: Humanities.

AS.010.315. Art of the Assyrian Empire, 1000-600 BCE. 3.0 Credits.
The Assyrian Empire dominated the ancient world from 1000-612 BCE, stretching from Iran to Egypt and laying the foundation for the later Persian and Macedonian empires. With imperial expansion came an explosion of artistic production ranging from palace wall reliefs to small-scale luxury objects. This course provides an integrated picture of the imperial arts of this first great empire, situating it within the broader social and political contexts of the first millennium BCE.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.316. Venetian Art and the Mediterranean World: 1350-1550. 3.0 Credits.
This course is an investigation into the fashioning of Venetian identity in architecture and the visual arts, with a particular address to the encounter with Byzantine and Islamic traditions and exchanges with other centers of the Italian peninsula.
Instructor(s): S. Campbell
Area: Humanities.
AS.010.320. Art of Colonial Peru. 3.0 Credits.
Viewed within the dynamic historical context of colonial society, we consider the pictorial, sculptural, and architectural programs that ensued in viceregal Peru (1532-1825). We examine the role of religious orders, art schools, artisan guilds and cofradía, and consider the social and political implications of art patronage.
Instructor(s): L. Deleonardis
Area: Humanities.

AS.010.322. Knowledge, Holiness, and Pleasure: The Illustrated Book in the Medieval World. 3.0 Credits.
The book was the primary source for the collection of knowledge in the Middle Ages. It was also the medium for the preservation and proliferation of the texts that underlay the three monotheistic religions (Judaism, Christianity, Islam). Finally, the book served as a source for elite entertainment, perhaps most importantly in Late Antiquity and the later Middle Ages. This course investigates the role of the illustrated book within the political, religious, and artistic developments that took place after the rise of Christianity from the end of the Roman Empire until the early modern period in the medieval West and in Byzantium, permeating Jewish and Islamic traditions. We will examine how the different types of books, such as horizontal and vertical scrolls, large and miniature size codices influenced the placement, conception, and style of the illustrations. The course also addresses processes of manufacture, issues of materiality (i.e. precious multi-media book covers, parchment, paper), and the relationship between text and image. A major aspect of the seminar focuses on the performative aspect of the book in its wide range of functions: secular and liturgical, public and private. Students will be able to work first hand with manuscripts and facsimiles from the rare book collection of Eisenhower Library and the Walters Art Museum.
Instructor(s): N. Zhomelidse.

AS.010.325. Arts of the Spanish Empire. 3.0 Credits.
From the sixteenth through the eighteenth centuries, visual forms and practices linked such disparate places as Mexico City and Naples, Manila and Lima, Cuzco and Antwerp, Quito and Madrid: all cities in the Spanish Empire. This course provides an overview of the visual strategies deployed by the Spanish Crown and the Catholic Church across these vast global geographies to consolidate political power and instill religious faith. Such regimes of visuality were reshaped by local conditions and concerns. Focusing on different cities in the Spanish Empire, this course will examine the entanglements between the global and universal ideals of empire and their local manifestations and contestations. Students will gain a broad understanding of the diversity of artistic production in the Spanish empire, exploring religious paintings and sculptures; maps used for imperial surveillance; luxury goods crafted from shimmering feathers, ceramics, ivory, and precious metals; urban design and architecture from the ports of Europe to the highland outposts of the Andes; ephemeral cityscapes for civic performance. Through an examination of such topics, this course offers an introduction to the art historical methods and theoretical concerns used to study objects within an imperial frame.
Instructor(s): A. Hyman
Area: Humanities.

AS.010.329. Building an Empire: Architecture of the Ottoman Capitals, c. 1300–1600. 3.0 Credits.
Centered on modern-day Turkey and encompassing vast territories in Asia, Africa, and Europe, the Ottoman Empire (1299 – 1923) was the longest lived and among the most powerful Islamic states in history, with an artistic tradition to match. This course explores the functional and symbolic role that architecture played during the empire's formative centuries, when three successive capitals — Bursa, Edirne, and Istanbul — served to visualize the sultans' growing claims to universal authority. With reference to mosques, palaces, tombs, and other categories of architecture, the course will examine the buildings in their artistic, social, and political contexts. Themes to be addressed include patronage and audience, architectural practice and the building trade, ceremonial and ritual, topography and urban planning, and the relationship of Ottoman architecture to other traditions.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.330. Art of the Caliphates: Visual Culture and Competition in the Medieval Islamic World. 3.0 Credits.
Despite its modern-day association with a fringe extremist movement, the term "caliphate" was traditionally used to describe the Muslim world at large, the political and spiritual ruler of which bore the title of caliph. The original Islamic caliphate was established in the seventh century as a vast empire centered on the Middle East and extending deep into Africa, Asia, and Europe. It soon broke apart into a series of competing powers, until in the tenth century, three rival dynasties—the Baghdad-based Abbasids, the Spanish Umayyads, and the Fatimids of North Africa—each claimed to be the rightful caliphate. This course will examine how these fascinating political developments and conflicts played out in the realm of art and architecture between the seventh and thirteenth centuries. As well as palaces, mosques, and commemorative buildings, the course will look at media ranging from ceramics and metalwork to textiles and illustrated manuscripts, with many of the artifacts being viewed firsthand in local museum collections. These works will be considered in relation to such themes as patronage, audience, ceremony, and meaning. Particular attention will be paid to how the various caliphaties—both in emulation of and competition with one another—used visual culture as a powerful tool to assert their legitimacy.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.331. The Renaissance Body Exposed: Exhibiting the Nude in European Art 1400-1550. 3.0 Credits.
Explores the extraordinary currency of the naked human figure in pre-modern European visual culture, only inadequately accounted for by explanations such as the "rise of naturalism" or the "revival of antiquity." Will also explore curatorial questions arising from an exhibition currently in preparation on the Renaissance nude. Assignment in the form of catalog texts and a "virtual exhibition."
Instructor(s): S. Campbell
Area: Humanities
Writing Intensive.
AS.010.333. The Re-Making of Rome: from Michelangelo to Mussolini. 3.0 Credits.
The transformation of Rome from a medieval backwater into a world center with multiple, overlapping identities: the ruinous symbol of ephemeral glory, the spiritual destination of pilgrims and tourists, the seat of a priest/monarch claiming universal dominion, and, above all, the “theater of the world” where a cultural and ethnic heterogeneity unparalleled in any other European urban center was permanently on display.
Instructor(s): S. Campbell
Area: Humanities

AS.010.340. Renaissance Art in the Netherlands: Broederlam to Bosch. 3.0 Credits.
Explores the major painters working in the Low Countries during the fifteenth century. Melchior Broederlam, the Master of Flémalle, Jan van Eyck, Rogier van der Weyden; Hans Memling, Hugo van der Goes, Hieronymus Bosch, and others.
Instructor(s): M. Merback
Area: Humanities

AS.010.360. Medieval Art in Europe: Methodology, Historiography, Theory. 3.0 Credits.
The course explores the conceptual character of medieval European art from Late Antiquity to the end of the Middle Ages with an emphasis on methodological, historiographical, and theoretical issues. Using selected monuments and objects from a wide geographical range and dating from the 4th to the 14th centuries as case studies, students will also familiarize with the methodological developments of art historical research. The course will focus in particular on the “anthropological turn” of medieval art history and medieval image theory.
Instructor(s): N. Zchomelidse
Area: Humanities

AS.010.365. Art of the Ancient Andes. 3.0 Credits.
The ancient visual arts of Andean South America and their respective cultural contexts form the basis of this course. In conjunction with the Baltimore Museum of Art and the Johns Hopkins Archaeological Museum students will have access to collections for study.
Instructor(s): L. Deleonardis
Area: Humanities

AS.010.366. Native American Art. 3.0 Credits.
The works of Native American artists are examined and discussed in their respective social and historical contexts. Such works include Hopewell stone sculpture, Mimbres pictorial painting, and Tlingit guardian figures. We examine the concept of sacred landscape through analysis of monumental earthworks and effigy mounds, Anasazi architecture, and rock art. In conjunction with the Baltimore Museum of Art (BMA), and Johns Hopkins Special Collections, students will have access to collections for study.
Instructor(s): L. Deleonardis
Area: Humanities

AS.010.382. The Politics of Display in South Asia. 3.0 Credits.
Through examining collecting, patronage, colonial exhibitions, and museums, this course examines how South Asia has been constructed in practices of display. Themes: politics of representation, spectacle, ethnography, and economies of desire related to colonialism and the rise of modernity. Cross-list with Anthropology, Museums and Society and Political Science.
Instructor(s): R. Brown
Area: Humanities
Writing Intensive

AS.010.389. The Stone and the Thread. 3.0 Credits.
The ancient visual arts of Andean South America and their respective cultural contexts form the basis of this course. Shared forms and ideas implicit in the fiber arts offer comparative points for analysis and discussion.
Instructor(s): L. Deleonardis
Area: Humanities
Writing Intensive

AS.010.398. Tombs for the Living. 3.0 Credits.
Centering on the tomb as the unit of analysis, this course examines the cultural and material aspects of death and funerary ritual. Draws on case studies from North America, Mesoamerica, and the Andes. Collections study in museums.
Instructor(s): L. Deleonardis
Area: Humanities

AS.010.400. Looking at Language: Vision and Textuality from Surrealism to the Present. 3.0 Credits.
Considers the emergence of the “written painting” and other uses of language in the visual arts. Among our case studies: Magritte, Twombly, Ruscha, Indiana, Holzer, Wool, Liglon, Darboven.
Instructor(s): M. Warnock
Area: Humanities

AS.010.403. Art and Science in the Middle Ages. 3.0 Credits.
This course investigates the intersections of art and science from the Carolingian period through the fourteenth century and the historical role images played in the pursuit of epistemic truths. Science – from the Latin scientia, or knowledge – in the Middle Ages included a broad range of intellectual pursuits into both the supernatural and natural worlds, and scholars have classified these pursuits in various ways (i.e. experimental or theoretical science, practical science, magic, and natural philosophy). A particular focus of this seminar will be placed on the assimilation of Greek and Islamic scientific advances in cartography, cosmology, and optical theory into the Latin theological tradition.
Instructor(s): C. Lakey
Area: Humanities
Writing Intensive

AS.010.404. The Cult Image in the Renaissance. 3.0 Credits.
This course discusses the role of cult images in the Renaissance period. While art historical scholarship has regarded images of cult as a medieval phenomenon, more recent studies (Holmes, Pon) address precisely the fact that image cults multiplied in line with the development of new aesthetic principles and theories of art in the context of the humanist circles in early modern Italy. The class challenges the idea of a division between the era of images and that of art as proposed by Hans Belting some 25 years ago. We investigate the emergence of a variety of new types of images made for public cults, such as wall paintings, prints, wooden sculpture, feathers, and their architectural and urban settings. How did the medieval tradition of the icon merge with the scientific and humanistic achievements of the early modern period? Moreover, we will examine the proliferation of cult images from Italy to other parts of Europe and beyond, such as the Americas and Asia, where the conception of new such images drew heavily on indigenous artistic and religious practices. There will be a final paper. Course is co-listed with AS.010.616.
Instructor(s): N. Zchomelidse
Area: Humanities
Writing Intensive

AS.010.416. Mediterranean Portraits: From manuscript to print, 1500-1800. 3.0 Credits.
This course examines the development of the visual portrait in Early Modern Europe (1500-1800) through an investigation of portraits painted on manuscript pages, metal prints, wood engravings, copper engravings, and oil paintings. The course is divided into two parts, with the first exploring portrait conventions on manuscript pages in the fifteenth and sixteenth centuries and the second examining the development of image technologies and portrait conventions on paper during the seventeenth and eighteenth centuries. From manuscript to print, 1500-1800.

AS.010.616. The Politics of Display. 3.0 Credits.
The ancient visual arts of Andean South America and their respective cultural contexts form the basis of this course. In conjunction with the Baltimore Museum of Art and the Johns Hopkins Archaeological Museum students will have access to collections for study.
Instructor(s): L. Deleonardis
Area: Humanities
Writing Intensive

AS.010.682. The Cult Image in the Renaissance. 3.0 Credits.
This course discusses the role of cult images in the Renaissance period. While art historical scholarship has regarded images of cult as a medieval phenomenon, more recent studies (Holmes, Pon) address precisely the fact that image cults multiplied in line with the development of new aesthetic principles and theories of art in the context of the humanist circles in early modern Italy. The class challenges the idea of a division between the era of images and that of art as proposed by Hans Belting some 25 years ago. We investigate the emergence of a variety of new types of images made for public cults, such as wall paintings, prints, wooden sculpture, feathers, and their architectural and urban settings. How did the medieval tradition of the icon merge with the scientific and humanistic achievements of the early modern period? Moreover, we will examine the proliferation of cult images from Italy to other parts of Europe and beyond, such as the Americas and Asia, where the conception of new such images drew heavily on indigenous artistic and religious practices. There will be a final paper. Course is co-listed with AS.010.616.
Instructor(s): N. Zchomelidse
Area: Humanities
Writing Intensive
AS.010.407. Ancient Americas Metallurgy. 3.0 Credits.
Centering on a series of case studies, this course addresses the technology, aesthetics, and social significance of metals. We trace the development of metals from 1500 BCE in Chile and Peru, to the 16th century in Colombia and central Mexico, pausing to examine its forms and meanings in various cultural contexts, and the ideas that inform its value. In conjunction with the Baltimore Museum of Art (BMA), the Walters Art Museum (WAM), and the Johns Hopkins Archaeology Museum (JHUAM), students will have access to ancient metal works for study.
Instructor(s): L. DeLeoni
Area: Humanities.

AS.010.410. The Epistemology of Photography. 3.0 Credits.
This seminar will ask how photography produces ways of knowing: how does photography’s reality-effect shape its dissemination and absorption? Is photography’s emergence during the colonial era coincidental or catalytic? How is memory (re)composed in a photography-saturated world? What kinds of histories does photography encourage and discourage? Is a photograph an object? We will read across disciplines (literature, anthropology, history, history of art, political science, theory) to investigate the epistemology of photography and the photograph.
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

AS.010.413. Historical and Conceptual Bases of Art History. 3.0 Credits.
Critical readings in and of relevance to the intellectual foundations of the modern discipline of art history. Texts by Wölflin, Riegl, Warburg, Panofsky, Baxandall, Alpers, Clark, Fried, and others. There will be two papers, no exams.
Instructor(s): S. Campbell
Area: Humanities
Writing Intensive.

AS.010.416. Medieval Art and Architecture in Southern Italy. 3.0 Credits.
This seminar discusses the exceptionally high standard and wide range of artistic and architectural creativity in medieval southern Italy. The specific historical situation of Italy’s southern regions and islands— which were exposed to a long sequence of military invasions, subjected to foreign rulers and centrally positioned within the Mediterranean— resulted in a fascinating, often interconnected, artistic and architectural landscape. We will address in particular the multiethnic and multi-religious environment of the region, the specific mobility of artists and patrons, questions of materiality of art works, and the intersection of art and science in the centers of learning (schools, monasteries, and courts). Those issues will be investigated by raising also larger theoretical and historiographic questions.
Instructor(s): N. Zchomelidse
Area: Humanities
Writing Intensive.

AS.010.418. The Icon in East and West. 3.0 Credits.
The chronologically structured seminar discusses the conception and reception of holy images in the Middle Ages from Late Antiquity until the beginning of the Renaissance. We will investigate their creation during the rise of Christianity and their affinities with Graeco-Roman portraits and cult images. Another focus is dedicated to the theological and political context of icons during the waves of early medieval iconoclasm, in particular in Byzantium. We will address icons made in the Holy Land during the crusades, which are often characterized by merging Frankish and Byzantine styles and motifs with Islamic art. We will discuss the emergence of new icons in Italy, and their pan-European distribution after 1100. Here we will focus on the influence of the papal court and the economic impact of icons in the later Middle Ages in the Italian commune.
Instructor(s): N. Zchomelidse
Area: Humanities
Writing Intensive.

AS.010.419. Passion Image, Passion Cult, Passion Drama: Narrative and Metaphor in the Middle Ages, Renaissance, and Beyond. 3.0 Credits.
A set of interdisciplinary explorations of the Passion of Christ narrative in Scripture, theology, visionary literature, cultic devotion, the visual and dramatic arts in Europe from the Central Middle Ages to the Reformation, with a special fast-forward to modern cinematic retellings of the Passion story.
Instructor(s): M. Merback
Area: Humanities
Writing Intensive.

AS.010.421. Creating Sacred Space in the Ancient and Medieval World. 3.0 Credits.
What makes a space sacred? How is it different from other spaces? This seminar explores the various means of visual, artifactual, architectural, and performative means of creating sacred space in the ancient and medieval worlds of the Near East and Mediterranean. Possible cases for study include early Sumerian temples, state-sponsored Assyrian temples, votive deposits, Greek sanctuaries, sanctuaries and landscape, early medieval Jewish, Christian, and Islamic cult buildings, cave sanctuaries, pilgrimage sites, icons and sacred space.
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

AS.010.425. Patronage and Power: The Art of the Book in the Middle Ages. 3.0 Credits.
This research seminar surveys the rich history of manuscript painting in the Middle Ages through the lens of patronage. By focusing on elite patrons – i.e. Popes, Clerics, Holy Roman Emperors, Princes, Princesses, and other ruling figures – we will investigate how changes in style from the early Christian period through the fifteenth century reveal the fluid nature of politics and power during this volatile time period. We will visit local collections of manuscripts (e.g. the Walters Art Museum) and make use of the extensive holdings of medieval facsimiles in Special Collections.
Instructor(s): C. Lakey
Area: Humanities.
AS.010.434. Italian Art, Politics, and Religion in the time of Dante, c. 1250-1400. 3.0 Credits.
This seminar will investigate the interrelationship between art, politics, and religion on the Italian peninsula during the later Middle Ages. We will focus on the major cities as patrons of the arts (visual and poetic), e.g. Florence, Siena, Padua, Milan, Naples, Venice, and Rome, in order to understand how the elite used art to further their political and religious agendas. Select topics include: the rise of the Mendicant orders; the importance of Dante’s Divine Comedy on manuscript production; artistic competition among communes; the rise of the individual artist; humanism and the arts.
Instructor(s): C. Lakey
Area: Humanities.

AS.010.435. Minimalism in Transnational Context. 3.0 Credits.
Critical examination of arguably the most important crux in post-WWII art, criticism, and theory, with attention to displacements and transformations of Minimalism outside the US. There will be a final paper.
Instructor(s): M. Warnock
Area: Humanities.

AS.010.436. Orientalism and Occidentalism: The Discourse of the Other in the Visual Arts. 3.0 Credits.
This course explores works of art and architecture that reveal or are informed by the long, complex, and often troubled relationship between the West and the Islamic world. Though extending in scope from the early modern period into our own time, the course focuses on the eighteenth and nineteenth centuries, when East-West artistic interactions were arguably at their liveliest and most charged. Topics to be addressed include Ottoman Baroque architecture, Orientalist painting of the nineteenth century, Qajar portraiture and photography, Islamicate architecture at Western world’s fairs, and the recent Danish cartoons of the Prophet Muhammad. Students will be encouraged to consider the differences as well as commonalities between these various modes of cross-cultural representation and engagement, and to think critically about the political, cultural, and artistic conditions that engendered and shaped them.
Instructor(s): U. Rustem
Area: Humanities
Writing Intensive.

AS.010.438. Word and Image in Renaissance Italy: Rethinking the "Art of Humanism". 3.0 Credits.
This course examines the intersection of intellectual and artistic milieux with case studies from Petrarch to Tasso.
Instructor(s): S. Campbell
Area: Humanities

AS.010.470. Power and Politics in Assyrian Art. 3.0 Credits.
Assyria, centered in northern Iraq, created one of the world’s first great empires that dominated the ancient Near Eastern world from around 900 to 612 BCE. In concert with imperial expansion came an explosion of artistic production ranging from palace wall reliefs to small-scale luxury objects. This seminar examines the close relationship between the arts and politics in the Assyrian empire. Some themes that will be explored are: historical narrative, text and image, portable luxury arts and gender, politics and religion. The course will engage in close visual analysis of the ancient materials and readings of critical scholarship.
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

AS.010.501. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.010.502. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.010.503. Reading Course in History of Art. 2.0 Credits.
Open to students by arrangement with a faculty advisor in the History of Art Department.
Instructor(s): M. Merback.

AS.010.506. Internship - Spring. 1.0 Credit.
Instructor(s): C. Lakey.

AS.010.507. Internship. 1.0 Credit.
Instructor(s): S. Campbell.

AS.010.521. Honors Thesis. 0.0 - 3.0 Credits.
Open to students by arrangement with a faculty advisor in the History of Art Department. Interested students should review the program description available in the department office.
Instructor(s): Staff
Writing Intensive.

AS.010.522. Honors Thesis. 3.0 Credits.
Instructor(s): Staff
Writing Intensive.

AS.010.596. Internship-Summer. 1.0 Credit.
Instructor(s): Staff.

AS.010.597. Independent Study-Summer. 3.0 Credits.
Instructor(s): L. DeLeonardis; M. Koortbojian; R. Brown; S. Campbell.

AS.010.600. Looking at Language: Vision and Textuality from Surrealism to the Present.
Considers the emergence of the "written painting" and other uses of language in the visual arts. Among our case studies: Magritte, Twombly, Ruscha, Indiana, Holzer, Wool, Ligons, Darboven.
Instructor(s): M. Warnock
Area: Humanities.

AS.010.604. The Five Senses and Art in Pre-Modern Europe (1100-1500).
The course investigates the importance of sensation in the creation and perception of Medieval and Renaissance art. Starting from the premise that sensation is a cultural phenomenon, this seminar invites students to rethink the relationship of the visual and the textual to the non-visual and the non-textual. Open to advanced majors in History of Art by permission.
Instructor(s): M. Bagnoli; N. Zchomelidse.

AS.010.607. The Epistemology of Photography.
This seminar will ask how photography produces ways of knowing: how does photography’s reality-effect shape its dissemination and absorption? Is photography’s emergence during the colonial era coincidental or catalytic? How is memory (re)constituted in a photography-saturated world? What kinds of histories does photography encourage and discourage? Is a photograph an object? We will read across disciplines (literature, anthropology, history, history of art, political science, theory) to investigate the epistemology of photography and the photograph.
Instructor(s): R. Brown.

AS.010.608. The Picture as Object.
This seminar will explore cases of Italian pre-modern picture-making in various media (painting, metal, stone, textile, etc) that solicit tactile as well as sensory engagement, and that call into question the “Albertian” metaphor of pictura as window. Case studies will include mosaics, reliefs, pastiglia, medals, portable paintings, and works by Giotto, Carlo Crivelli, and Sebastiano del Piombo, among others.
Instructor(s): C. Lakey; S. Campbell.
AS.010.609. Art and Science in the Middle Ages.
This course investigates the intersections of art and science from the Carolingian period through the fourteenth century and the historical role images played in the pursuit of epistemic truths. Science – from the Latin scientia, or knowledge – in the Middle Ages included a broad range of intellectual pursuits into both the supernatural and natural worlds, and scholars have classified these pursuits in various ways (i.e. experimental or theoretical science, practical science, magic, and natural philosophy). A particular focus of this seminar will be placed on the assimilation of Greek and Islamic scientific advances in cartography, cosmology, and optical theory into the Latin theological tradition.
Instructor(s): C. Lakey
Area: Humanities.

AS.010.610. Image, Theory, Matter in Medieval Visual Culture.
This seminar considers the relationship between foundational approaches to medieval art history and recent methodologies that focus on 'thing-signification.' Primary materials in local collections will be closely analyzed.
Instructor(s): C. Lakey.

Seals, artifacts associated with property, oversight, and control, were used in the ancient Near East as early as the 7th millennium BCE. These took the form of a single carved surface that could be impressed in a malleable substance such as clay to leave behind a physical mark. With the growth of large-scale urbanism and, most critical, the invention of cuneiform writing, a spool-shaped seal carved around its circumference appeared. This quintessentially Mesopotamian artifact – the cylinder seal – persisted until cuneiform writing died out around the beginning of the Common Era. The over-three-thousand-year span of the cylinder seal provides remarkably rich evidence for the ancient civilizations of the Near East.
Instructor(s): M. Feldman.

AS.010.612. Medieval Art and Architecture in Southern Italy.
This seminar discusses the exceptionally high standard and wide range of artistic and architectural creativity in medieval southern Italy. The specific historical situation of Italy's southern regions and islands – which were exposed to a long sequence of military invasions, subjected to foreign rulers and centrally positioned within the Mediterranean – resulted in a fascinating, often interconnected, artistic and architectural landscape. We will address in particular the multiethnic and multi-religious environment of the region, the specific mobility of artists and patrons, questions of materiality of art works, and the intersection of art and science in the centers of learning (schools, monasteries, and courts). Those issues will be investigated by raising also larger theoretical and historiographic questions.
Instructor(s): N. Zchomelidse
Area: Humanities.

AS.010.613. Renaissance Italy: Questions of Artistic Geography.
The role of place in the art historiography of the Renaissance, with readings in geographical theory. The seminar will also consider the role in the art of Lorenzo Lotto, Gaudenzio Ferrari, Cesare da Sesto, Romanino, Moretto, Pordenone, Titian, and other artists active before the canon-formation enterprise of Giorgio Vasari definitively altered the map of Italian art after 1550.
Instructor(s): S. Campbell.

Critical exploration of the major models developed by art historians to describe the forms of attention mobilized by visual imagery, the role of the beholder in realizing meaning, the dynamics of response, and the reflexivity of works of art. Intersections with literary history and theory, phenomenology, and reception-aesthetics will be examined in tandem with art-historical case studies. Authors include Riegl, Benjamin, Gombrich, Baxandall, Kemp, Fried, Cray, Bryson, Melville, Husserl, Iser, Jauss, Merleau-Ponty, Foucault, Barthes, Deleuze and Guattari.
Instructor(s): M. Merback.

AS.010.615. The Reform of the Image in Catholic Europe 1500-1600.
Aspects of the reform of art in Italy and Spain, as manifested in official attempts to discipline artistic practice and through artistic initiatives; emphasis on primary sources and recent scholarly debates.
Instructor(s): F. Pereda; S. Campbell.

AS.010.616. The Cult Image in the Renaissance.
This course discusses the role of cult images in the Renaissance period. While art historical scholarship has regarded images of cult as a medieval phenomenon, more recent studies (Holmes, Pon) address precisely the fact that image cults multiplied in line with the development of new aesthetic principles and theories of art in the context of the humanist circles in early modern Italy. The class challenges the idea of a division between the era of images and that of art as proposed by Hans Belting some 25 years ago. We investigate the emergence of the variety of new types of images made for public cults, such as wall paintings, prints, wooden sculpture, feathers, and their architectural and urban settings.
How did the medieval tradition of the icon merge with the scientific and humanistic achievements of the early modern period? Moreover, we will examine the proliferation of cult images from Italy to other parts of Europe and beyond, such as the Americas and Asia, where the conception of new such images drew heavily on indigenous artistic and religious practices.
There will be a final paper. Co-listed with AS.010.404
Instructor(s): F. Pereda; S. Campbell
Area: Humanities
Writing Intensive.

AS.010.618. Historical and Conceptual Bases of Art History.
Critical readings in and of relevance to the intellectual foundations of the modern discipline of art history. Texts by Wölfflin, Riegl, Warburg, Panofsky, Baxandall, Alpers, Clark, Fried, and others. There will be two papers, no exams.
Instructor(s): S. Campbell
Area: Humanities
Writing Intensive.

AS.010.619. Readings in Modern and Contemporary Asian Art.
Focusing on a range of art practices and movements in South, Southeast, and East Asia from the 20th and 21st centuries. Specific topics may include: performance art and the body, exhibitionary practices, nationalism and transnationalism, the role of the figural, modes of abstraction, art and the authoritarian state, Marxism and art practices, postcolonial politics and visual culture, artists’ travels to, from, and within Asia, spirituality and modernism, sexuality and gender. Undergraduates by special permission of the instructor.
Instructor(s): R. Brown
Area: Humanities.

AS.010.620. Re-thinking the Baroque: the Carracci to Poussin.
Instructor(s): S. Campbell
Area: Humanities.
AS.010.621. Topics in Early 20th Century Abstraction.
Critical examination of key works, texts, and topics in early 20th century abstraction, with an emphasis primarily on developments in Europe and the US.
Instructor(s): M. Warnock
Area: Humanities.

As a major global power straddling three continents, the Ottoman Empire developed a rich and diversified ceremonial culture aimed at impressing local and international audiences alike. This seminar will explore the ways in which works of art and architecture provided settings and apparatus for, and were themselves shaped and enlivened by, the ceremonial acts in which they featured. Covering the period between the sixteenth and nineteenth centuries, we will address a range of case studies—including mosque inaugurations, royal processions, the reception of foreign ambassadors, and the exchange of diplomatic gifts—with regard to their sociopolitical, visual, material, and spatial contexts. A major concern of the seminar will be the question of how Ottoman ceremonies, together with their staging and attendant art forms, were adapted in response to changing conditions and audiences, particularly with the shift from the early modern to the modern period. While our focus will be on the Ottoman Empire and its interactions with the surrounding world, the course will also consider the ceremonial cultures of two other great Islamic polities, Iran and Mughal India, which provide telling points of contrast to the Ottoman case.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.623. The Icon in East and West.
The chronologically structured seminar discusses the conception and reception of holy images in the Middle Ages from Late Antiquity until the beginning of the Renaissance. We will investigate their creation during the rise of Christianity and their affiliations with Graeco-Roman portraits and cult images. Another focus is dedicated to the theological and political context of icons during the waves of early medieval iconoclasm, in particular in Byzantium. We will address icons made in the Holy Land during the crusades, which are often characterized by merging Frankish and Byzantine styles and motifs with Islamic art. We will discuss the emergence of new icons in Italy, and their pan-European distribution after 1100. Here we will focus on the influence of the papal court and the economic impact of icons in the later Middle Ages in the Italian commune.
Instructor(s): N. Zchomelidse
Writing Intensive.

The arts of the Near East, Aegean and Egypt are typically taught separately from one another. However, the Mediterranean Sea has always served as a connector, and the diverse cultures of these areas were in close contact with one another for much of their histories. During the Bronze Age (3000 to 1200 BCE), these interactions were particularly dynamic, resulting in a diversity of arts including wall frescoes, precious jewelry, and elaborate furnishings and weaponry. This course examines the arts of the interactions among Near Easterners, Greeks, Egyptians and others. It focuses special attention on the role of artistic products in intercultural relations, including trade, diplomacy, war and imperialism. Students are not expected to have extensive knowledge of all the areas, although some experience in at least one of them will be helpful. The course will interweave establishing a knowledge base necessary to tackle this topic with broader conceptual concerns and interdisciplinary approaches (art historical, archaeological, anthropological, and historical). There will be a final paper.
Instructor(s): E. Anderson; M. Feldman
Area: Humanities.

AS.010.626. Place, Space, and Art History’s “Global Turn”.
In 1995, the publication of Claire Farago’s edited volume “Reframing the Renaissance” ushered in a “global turn” for the history of art. In its wake, the profusion of scholarly literature that contests art history’s fundamentally Eurocentric foundations and its traditional geographic delimitations of study—the nation chief amongst them—has grown dizzying. Studies of art in “cross-cultural,” “trans-national,” “imperial,” and “global” frames have quickly amounted to a daunting bibliography, one that extends far beyond art history. This seminar attempts to take stock of exactly where a global reorientation has taken art history and the methods already in use within, or that are being proposed for, the discipline. Particular emphasis will be placed on place, space, geography and context, concepts that are often only implicitly deployed in this growing literature; and we will attempt to tease out the new potentials, and attendant challenges, they pose for art historical investigation. In the process, students will gain a historiographic overview of “the global turn” and an introduction to the texts and methods from other disciplines that have proved critical to this geographic reorientation. While this course is focused on the early modern period, students will be encouraged to connect its broad theamtics to their own subfields and to pursue research topics related to any period and geography; and while the seminar focuses on art history’s historiographic trajectory, students from other disciplines interested in its broader theoretical and terminological frameworks are most welcome.
Instructor(s): A. Hyman
Area: Humanities.

AS.010.627. Patronage and Power: The Art of the Book in the Middle Ages.
This research seminar surveys the rich history of manuscript painting in the Middle Ages through the lens of patronage. By focusing on elite patrons – i.e. Popes, Clerics, Holy Roman Emperors, Princes, Princesses, and other ruling figures – we will investigate how changes in style from the early Christian period through the fifteenth century reveal the fluid nature of politics and power during this volatile time period. We will visit local collections of manuscripts (e.g. the Walters Art Museum) and make use of the extensive holdings of medieval facsimiles in Special Collections.
Instructor(s): C. Lakey
Area: Humanities.
AS.010.628. Word and Image in Renaissance Italy: Rethinking the "Art of Humanism.
This course examines the intersection of intellectual and artistic milieux with case studies from Petrarch to Tasso. This is the graduate section of AS.010.438.
Instructor(s): S. Campbell
Area: Humanities.

AS.010.635. Minimalism in Transnational Context.
Critical examination of arguably the most important crux in post-WWII art, criticism, and theory, with attention to displacements and transformations of Minimalism outside the US. There will be a final paper.
Instructor(s): M. Warnock
Area: Humanities.

AS.010.636. Orientalism and Occidentalism: The Discourse of the Other in the Visual Arts.
This course explores works of art and architecture that reveal or are informed by the long, complex, and often troubled relationship between the West and the Islamic world. Though extending in scope from the early modern period into our own time, the course focuses on the eighteenth and nineteenth centuries, when East-West artistic interactions were arguably at their liveliest and most charged. Topics to be addressed include Ottoman Baroque architecture, Orientalist painting of the eighteenth century, Qajar portraiture and photography, Islamicate architecture at Western world's fairs, and the recent Danish cartoons of the Prophet Muhammad. Students will be encouraged to consider the differences as well as commonalities between these various modes of cross-cultural representation and engagement, and to think critically about the political, cultural, and artistic conditions that engendered and shaped them.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.637. Ottoman Baroque and Beyond.
The eighteenth century saw the Ottoman capital of Istanbul transformed by the introduction of a brand-new style of architecture that scholars have dubbed the Ottoman Baroque. Informed, as its name suggests, by Western European models, this new manner of building heralded a permanent shift in late Ottoman visual culture that has been reductively discussed as decadent "Westernization." This seminar will challenge the conventional wisdom and reconsider the Ottoman Baroque as a timely and sophisticated artistic statement by which the empire reaffirmed its global standing in terms that were both locally rooted and internationally resonant. Topics to be addressed include the semiotics of style; the roles and relationships of patrons, artists, and viewers; architecture as a locus of ceremonial and spectacle; and cross-cultural connections and networks. Although focusing on the architecture of eighteenth-century Istanbul, the seminar will extend into other regions and art forms that demonstrate the impact of the Ottoman Baroque, and it will also consider the style's afterlife in the context of nineteenth-century Ottoman modernity.
Instructor(s): U. Rustem
Area: Humanities.

Instructor(s): S. Campbell
Area: Humanities
Writing Intensive.

This seminar examines the notion of the authentic in conjunction with medieval images. It investigates the construction, reception, and theoretical grounding of authenticity in regard to reliquaries, icons, and imprints on cloth or seals. These objects elucidate the shift from mimesis towards other artistic strategies (stylization, abstraction, bricolage) in the medieval period. Rather than studying different modes of representation, we will focus on the very validity of representation in the Middle Ages.
Instructor(s): N. Zchomelidse.

Acknowledging the central role art from around the globe played in the production of the modern, this seminar will engage with the emergent art historical, methodological, and theoretical literature shaping the history of modern art after the global turn. Particular case studies of regional art movements (in e.g. Cuba, Brazil, India, Japan, Iran, Nigeria) alongside discussion of key exhibitions and institutions. A special focus on the theoretical interlocutors for art movements and artists around the world, such as Fanon, Glissant, Bhabha, Chow, Spivak, Freire.
Instructor(s): R. Brown.

AS.010.654. Topics in Postwar Abstraction.
Emphasis on European and American case studies from Pollock to the present; figures may include: Newman, Still, Frankenthaler, Louis, Noland, Olitski, Stella, Ryman, Marden, Hantaï, Bishop, Jorn, Uecker, and Klein.
Instructor(s): M. Fried; M. Warnock.

AS.010.659. Passion Image, Passion Cult, Passion Drama: Narrative and Metaphor in the Middle Ages, Renaissance, and Beyond.
A set of interdisciplinary explorations of the Passion of Christ narrative in Scripture, theology, visionary literature, cultic devotion, the visual and dramatic arts in Europe from the Central Middle Ages to the Reformation, with a special fast-forward to modern cinematic retellings of the Passion story.
Instructor(s): M. Merback.

Assyria, centered in northern Iraq, created one of the world's first great empires that dominated the ancient Near Eastern world from around 900 to 612 BCE. In concert with imperial expansion came an explosion of architectural and artistic production including entire cities and their ornamentation. This seminar examines the close relationship between the arts and politics in the Assyrian empire. The course will engage in close visual analysis of the ancient materials and critical readings of scholarship. There will be a final project.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.689. Seeing Sculpture.
This course explores the art of sculpture in all of its historical forms, from the ancient world to contemporary art, and introduces students to the experiential and spatial challenges sculpture poses. Our focus will combine on-site studies of sculpture in local collections with the development of a critical vocabulary with which to write about those objects, one that draws on the rich history of responses to sculpture from the birth of modern art history to the present.
Instructor(s): C. Lakey
Area: Humanities.
**AS.010.700. Subversive Mirrors of Medieval and Renaissance Art and Literature.**

This seminar explores the various strategies of subversion employed by European painters, printmakers, and sculptors from c. 1300 to c. 1600: irony and satire, comic inversion and "serious play" (serio ludere), the grotesque and anti-classical formlessness, carnivalesque folly, inverted worlds, and impossible utopias will all be examined as phenomena of culture and in relation to their parallels and sources in literature. The seminar will culminate in a collaborative workshop with German counterparts from the Technische Universität Dresden, to take place on the Homewood Campus in early May.

Instructor(s): M. Merback
Area: Humanities.

**AS.010.701. What is a Stifterbild?.**

Critically examines classic and recent approaches to the study of donor portraits, votive images and gifts, embedded likenesses and "crypto-portraits" of patrons and rulers, with an emphasis on developments in Germany, France, and the Netherlands between 1250 and 1500.

Instructor(s): M. Merback
Area: Humanities.

**AS.010.707. Therapies of Art and Literature in Early Modern Europe.**

This seminar examines the myriad ways art and literature in Early Modern Europe addressed itself to its audiences as a form of therapy. Taking as our point of departure Petrarch's neo-Stoic therapy of the passions, the revival of consolatio literature, and the development of new Christian "wisdom" genres aimed at ethical self-cultivation, we consider how artists participated in the care of the body, the soul, and the self, innovating therapies that were at once sacramental and philosophical, spiritual and ethical. Intersections with the history of medicine will prompt us to inquire into the transposition of physiological and psychological theories, practices, and metaphors into the arena of ethical-spiritual therapy.

Instructor(s): M. Merback
Area: Humanities.

**AS.010.712. Albrecht Dürer: Art and Ethics on the Eve of the Reformation.**

This seminar examines Dürer's project to transform the genres of late medieval devotional art in line with his self-image as a Christian humanist painter. Against the backdrop of new agendas for reform, we consider Dürer's collaborations with Celtis, Chelidonius, and Pirckheimer; the therapeutic impulse behind his self-portraits, the works dedicated to friends, and his altarpieces; the Meisterstiche; and other works that thematized the Renaissance philosophical ideal, first found in Petrarch, of a life lived self-consciously and in service to others.

Instructor(s): M. Merback
Area: Humanities.

**AS.010.801. Special Rsrch & Problems.**

Instructor(s): Staff.

**AS.010.802. Spec Research/Problems.**

Instructor(s): Staff.

**AS.010.803. Individual Work.**

Instructor(s): Staff.

**AS.010.804. Individual Work.**

Instructor(s): Staff.

**AS.010.821. History of Art Practicum.**

Instructor(s): M. Merback.

**AS.010.890. Summer Practicum - History of Art.**

Instructor(s): S. Campbell.

**Cross Listed Courses**

**Classics**

**AS.040.137. Freshman Seminar: Archaeology at the Crossroads: The Ancient Eastern Mediterranean through Objects in the JHU Archaeological Museum. 3.0 Credits.**

This seminar investigates the Eastern Mediterranean as a space of intense cultural interaction in the Late Bronze Age, exploring how people, ideas, and things not only came into contact but deeply influenced one another through maritime trade, art, politics, etc. In addition to class discussion, we will work hands-on with artifacts from the JHU Archaeological Museum, focusing on material from Cyprus.

Instructor(s): E. Anderson
Area: Humanities
Writing Intensive.

**AS.040.150. Island Archeology: Land and Sea in Ancient Crete, Cyprus and the Cyclades. 3.0 Credits.**

Islands present highly distinctive contexts for social life. We examine three island worlds of the ancient eastern Mediterranean. These are places where water had a unique and powerful meaning and boat travel was part of daily life, where palaces flourished and contact with other societies implied voyages of great distance. Class combines close study of material and visual culture with consideration of island-specific interpretive paradigms; trips to Archaeological Museum.

Instructor(s): E. Anderson
Area: Humanities.

**AS.040.218. Celebration and Performance in Early Greece. 3.0 Credits.**

Surviving imagery suggests that persons in Minoan and Mycenaean societies engaged in various celebratory performances, including processions, feasts, and ecstatic dance. This course explores archaeological evidence of such celebrations, focusing on sociocultural roles, bodily experience, and interpretive challenges.

Instructor(s): E. Anderson
Area: Humanities.

**AS.040.235. Past is Present: Cultural Heritage and Global Interactions. 3.0 Credits.**

The uncovering, collection and valuation of the archaeological past is deeply embroiled in global interactions - diplomatic, economic, cultural. We examine the complex role of cultural heritage through consideration of case studies and analytic approaches. Frequent visits to area museums.

Instructor(s): E. Anderson
Area: Humanities.

**AS.040.320. Myth In Classical Art. 3.0 Credits.**

This course traces the representation of the principal gods and heroes of Greek myth in the visual arts (sculpture and vase-painting), as well as later reflections in Roman painting.

Instructor(s): A. Shapiro
Area: Humanities.

**AS.040.363. Craft and Craftpersons of the Ancient World: Status, Creativity and Tradition. 3.0 Credits.**

This course explores the dynamic work and social roles of craftpersons in early Greece, the eastern Mediterranean and Near East. Readings and discussion will query the identities and contributions of these people—travelers, captives, lauded masters, and even children—through topics including gender, class, and ethnicity. Special focus on late third-early first millennia BCE; local field trips.

Instructor(s): E. Anderson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.040.366. The Archaeology of Ancient Cyprus: Investigating a Mediterranean Island World in the JHU Museum. 3.0 Credits.
This course explores the visual and material worlds of ancient Cyprus from the earliest human evidence through the Iron Age. Course topics will include the island's unique position between the Aegean and Near East and how this has impacted both Cyprus' ancient past and the way in which it has been conceived in the modern world. Class involves regular analysis of artifacts based in the Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities.

AS.040.373. Propaganda and the Art of Visual Politics during the Roman Empire. 3.0 Credits.
We will examine visual expressions of propaganda in the city of Rome, considering how emperors used public art to promote their political agendas and their ideological vision of power. Dean's Teaching Fellowship course
Instructor(s): A. Shapiro
Area: Humanities.

AS.040.621. Proseminar to Classical Archaeology.
An introduction to research methods and current topics of discussion in the scholarship on Greek and Roman art and archaeology.
Instructor(s): A. Shapiro
Area: Humanities.

Anthropology
AS.070.300. The Global Artwork. 3.0 Credits.
This course is about art practice in a postcolonial context, where the techniques and pictorial concepts formed by a European history of art are confronted by different kinds of political struggles, and posed against the background of religious traditions other than that of Christianity. What problems of history, difference and the self arise in this context, and what forms of art practice emerge to address these problems? In what ways do these forms of art practice draw upon religious traditions, and how do we think about the displacement of religious traditions in modern art? In this course, we will explore these questions by examining the modern art of the Middle East, South Asia, and China, in conjunction with readings from anthropology, art history, comparative literature, philosophy and religious studies.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.070.343. On Seeing: Between Religion and Art. 3.0 Credits.
This course reflects on what it is to see, by examining how different religious traditions have conceived of seeing, and then considering how seeing is organized by modern forms of art practice. Our inquiry will range across a variety of cases—from devotional practices in Christianity and Hinduism; to concepts of vision in the Islamic tradition; to the critique of images during the Protestant Reformation and the legacy of that critique in modernism; and to the development of new technologies like photography and film—and it will draw on readings from anthropology, art history, critical theory and religious studies.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences.

Near Eastern Studies
AS.130.213. Introduction to Ancient Egyptian Art. 3.0 Credits.
This class is a combination of illustrated lecture and discussion, punctuated with visits to museums with Egyptian collections.
Participations must be able to join at least one overnight trip to New York and/or Boston (weekend) and be available for two half day visits to Philadelphia and Washington, D.C. or elsewhere (TBA as best for participants), in addition to visiting Baltimore institutions with the class as part of the course. Discussion of sculpture will take place in front of the objects, so attendance is important for the visits.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.377. Creating an Egyptian Temple. 3.0 Credits.
This class will challenge every participant to plan a temple environment for a particular deity. The readings, lectures, and discussions will cover the mythology around specific gods and how it influenced temple architecture, location, ritual, and festivals. It will survey the history of temple building in Egypt, the role of architecture and art – particularly wall reliefs – in communicating the functions of particular parts of temples.
The aim is to help students understand what requirements an Egyptian temple needed to fulfill. Then each student will plan a temple for a chosen deity and explain to peers how it meets the ancient requirements.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.420. Seminar in Research Methods in Near Eastern Studies: (Auto)biography in the Ancient Near East. 3.0 Credits.
Just as in our time, the peoples of the ancient Near East were greatly interested in their own pasts. One of the most vibrant manifestations of this interest was the writing of biographies, in which ancient authors told the stories of individual lives. These biographies present an enormous challenge to contemporary historians. On the one hand, they offer a wealth of evidence – sometimes our only evidence – about some of the most famous persons of antiquity. On the other hand, the biographies were seldom written according to what we might consider “proper historical method.” How, as modern historians, do we approach these biographies in studying the ancient past? Using a variety of case studies, students will develop skills in specific research skills such as critical reading, analysis, and interpretation. AS.130.420 is required of NES Majors, but is also open to non-majors who have taken at least one 100-level and one 300-level Near Eastern Civilization course, or with the consent of the instructor.
Instructor(s): J. Lauinger
Area: Humanities Writing Intensive.

AS.133.657. Creating an Egyptian Temple.
This class will challenge every participant to plan a temple environment for a particular deity. The readings, lectures, and discussions will cover the mythology around specific gods and how it influenced temple architecture, location, ritual, and festivals. It will survey the history of temple building in Egypt, the role of architecture and art – particularly wall reliefs – in communicating the functions of particular parts of temples.
The aim is to help students understand what requirements an Egyptian temple needed to fulfill. Then each student will plan a temple for a chosen deity and explain to peers how it meets the ancient requirements.
Instructor(s): B. Bryan
Area: Humanities.
AS.389.201. Introduction to the Museum: Past and Present. 3.0 Credits.
This course surveys museums, from their origins to their most contemporary forms, in the context of broader historical, intellectual, and cultural trends including the social movements of the 20th century. Anthropology, art, history, and science museums are considered. Cross-listed with History and History of Art.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.205. Examining Archaeological Objects. 3.0 Credits.
This course considers the role of materials in the production, study and interpretation of objects by examining artifacts from the Johns Hopkins Archaeological Museum. Students will consider materials such as ceramics, stone, metal, glass, wood and textiles, and visit artists’ studios to gain an understanding of historical manufacturing processes. M&S practicum course. Cross-listed with Archaeology, Near Eastern Studies, Classics, and History of Art.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.303. World of Things. 3.0 Credits.
This course introduces students to current approaches to objects, their materials, and materiality. Each class starts from a specific inspiration (body parts, fakes, the materiality of ISIS....) and treats the museum as a site for investigating the relationship between people and things.
Instructor(s): J. Kingsley.

AS.389.315. Ancient Color: The Technologies and Meanings of Color in Antiquity. 3.0 Credits.
What role did the colorful surfaces of sculptures, vessels and textiles play in the ancient world? We examine historical texts and recent scholarly and scientific publications on the technologies and meanings of color in antiquity, and use imaging and analytical techniques to study polychromed objects from the Johns Hopkins Archaeological Museum.
Instructor(s): S. Balachandran
Area: Humanities, Social and Behavioral Sciences.

AS.389.340. Critical Issues in Art Conservation. 3.0 Credits.
The course examines recent controversies in the conservation of major global art works and sites, raising questions concerning the basic theoretical assumptions, practical methods and ethical implications of art conservation. Cross-Listed with History of Art and Anthropology.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.355. Halls of Wonder: Art, Science, and Literature in the Age of the Marvelous, 1500-1800. 3.0 Credits.
Instructor(s): E. Havens
Area: Humanities.

AS.389.358. Collecting the Contemporary. 3.0 Credits.
What does it mean to be a collector? Students will visit private collections of contemporary art in Baltimore, learning from collectors and their objects. This course alternates seminar meetings, focused on theories and practices of collecting, with field trips. Cross-listed with History of Art.
Instructor(s): V. Anderson
Area: Humanities, Social and Behavioral Sciences.

Writing Intensive.
The Department of the History of Science and Technology offers an undergraduate program leading to the degree of Bachelor of Arts with a major in science, medicine, and technology, and a graduate program leading to the degree of Doctor of Philosophy.

Undergraduate Programs
The department offers a variety of courses that deal with the history of the conceptual and technical development of the sciences, as well as the cultural and social impact of science and technology on civilization. These courses are open to all undergraduates in the Schools of Arts and Sciences and Engineering. A few of the courses require some background in an appropriate science, but most are accessible to those with no specialized knowledge who want to understand the part science has played in shaping modern culture. Students who have concerns about their technical competence for a given course should consult the professor involved.

Major in History of Science, Medicine, and Technology
Offered in cooperation with the Institute of the History of Medicine, this major allows students to combine substantive work in science with study of the social and historical context of modern science, medicine, and technology. The aim of the program is to produce graduates who are scientifically literate and technically competent, and who at the same time understand science and medicine not as static, autonomous enterprises but rather as modes of thought that have developed in specific social contexts.

The major is appropriate for any student planning a career in medicine or other areas of the health care industry. It is also flexible enough to serve as a basis for a variety of careers where an informed knowledge of science and technology and their impact on society is important. Such careers include broad areas of business and industry, journalism, teaching, museum work, and specialized areas of law and public policy.

Requirements for the B.A. Degree
Also see Requirements for a Bachelor’s Degree. (p. 7)

- Sciences: Students are required to have a total of 30 credits in science, engineering, and mathematics courses coded (E, N, or Q), of which at least nine credits must be above the 100-level. Laboratory courses in science count toward this requirement. Calculus I is strongly recommended.

- History of Science, Medicine and Technology: A total of 24 credits of course work in the history of science, medicine and technology are required. These must include at least two survey courses and four additional courses above the 100-level.

- Students in their senior year may take graduate courses with permission.

- A minimum grade of C– is necessary in all courses applied toward the requirements of the major and requirements may not be taken satisfactory/unsatisfactory. Each course must be at least 3 credits.

Two Survey Courses (select from the following): * 6

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>AS.140.105</td>
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<td>Rise Of Modern Science</td>
</tr>
<tr>
<td>AS.140.321</td>
<td>Scientific Revolution</td>
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</tbody>
</table>

Additional History of Science, Medicine & Technology Courses **
Two history of science, medicine & technology courses at any level 6
Four 200-400 level history of science, medicine & technology courses 12

Science, Math, or Engineering Courses (N, Q, or E)
Nine credits of 200-level or higher N, Q, or E courses 9
Twenty-one credits of N, Q, or E courses at any level 21
Total Credits 54

* Other courses might serve to fulfill the survey course requirement with permission of the director of undergraduate studies.
** The courses AS.140.411 Senior Research Seminar and AS.140.412 Research Seminar may not be used towards this requirement.

Sample Program
A typical program might include the following sequence of courses:

Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.140.1xx Freshman Seminar or other AS.140.xxx elective</td>
<td>3</td>
<td>AS.140.1xx Freshman Seminar or other AS.140.xxx elective</td>
<td>3</td>
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<tr>
<td>Any level N,Q,E course</td>
<td>3</td>
<td>Any level N,Q,E course</td>
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Sophomore

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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Survey course like AS.140.105 or AS.140.321 200 level or above N,Q,E course</td>
<td>3</td>
<td>Survey course like AS.140.106 or AS.140.302 200 level or above N,Q,E course</td>
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Junior

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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>AS.140.xxx HSMT elective above 100 level</td>
<td>3</td>
<td>AS.140.xxx HSMT elective above 100 level</td>
<td>3</td>
</tr>
<tr>
<td>AS.140.xxx HSMT elective above 100 level</td>
<td>3</td>
<td>Any level N,Q,E course</td>
<td>3</td>
</tr>
<tr>
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Senior

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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>AS.140.411 Senior Research Seminar (Optional)</td>
<td>2</td>
<td>AS.140.412 Research Seminar (Optional)</td>
<td>2</td>
</tr>
<tr>
<td>AS.140.xxx HSMT elective above 100 level</td>
<td>3</td>
<td>Any level N,Q,E course</td>
<td>3</td>
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</table>

Total Credits: 58

Honors in the Major
Students who demonstrate excellence in course work are eligible to write an honors thesis (AS.140.411 Senior Research Seminar and AS.140.412 Research Seminar) in their final year for additional credits. Students must have outstanding recommendations from two department members to be eligible for the thesis. Departmental honors are conferred if a student has a GPA of 3.5 or better in major requirements and receives a grade of A- or better on the thesis.

Minor in the History of Science, Medicine and Technology
The department offers a minor which may be combined with other science, social science, or humanities majors. To complete the requirements for the minor, students must have a total of 18 credits in the history of science, medicine, or technology, including at least one survey course. A minimum grade of C- is necessary in all courses applied toward the requirements of the major and requirements may not be taken satisfactory/unsatisfactory. Each course must be at least 3 credits.

One Survey Course (select from the following): *

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<tr>
<td>AS.140.321</td>
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</tr>
</tbody>
</table>

Additional History of Science, Medicine & Technology Courses
Five history of science, medicine & technology courses at any level 15
Total Credits 18

* Another course might serve to fulfill the survey course requirement with permission of the director of undergraduate studies.

Graduate Program

Ph.D. in the History of Science and Technology
The graduate program in the history of science and technology leads to the Ph.D. degree. Although an M.A. degree is granted, candidates who seek only that degree are not ordinarily admitted. The object of the Ph.D. program is to provide the rigorous training necessary for a scholarly career in teaching and research; consequently, the focus of the student’s activity will be the research seminars of the department. Faculty from the Institute of the History of Medicine in the School of Medicine also participate in the program.

Admission
Application deadline is January 15. All official supplemental materials (official transcripts, official GRE scores, and, when applicable, official TOEFL scores) should be sent directly to the Graduate Admissions Office at:

Johns Hopkins University
Full-time Graduate Studies in Arts, Sciences, and Engineering
Graduate Admissions Office
Shriver Hall 28
3400 North Charles Street
Baltimore, Maryland 21218

For further information on our faculty and programs, please visit our website at: http://host.jhu.edu.

Requirements for the Ph.D. Degree
Before candidates begin full-time research on their dissertations, they must prepare themselves adequately in the appropriate fields of knowledge, become skilled in the techniques of historical research, and be able to carry out a sustained piece of historical analysis and writing.
In the first year of the program students are introduced to the methods and techniques of research and complete a year-long survey course in the history of science or the history of medicine. Students in their second year of study present a research paper to the department. In the second and third years of study, students complete three “fields” or concentrations. One field should be within the Program, one in a historical discipline outside the Program, and the third is negotiable depending on student interests and needs. Our students have also done historical fields with curators or research historians at the Smithsonian Institution. The third field can extend beyond historical subjects and may involve a scientific subject, for example. A field is intended to demonstrate a student’s mastery of a specific body of knowledge, both for the student’s own scholarly work and as a preparation for teaching. The fields are individually arranged and satisfied. Before being admitted for formal candidacy for the degree, the student must also demonstrate a reading knowledge of two foreign languages. The final requirement for the Ph.D. degree is the completion of a dissertation that is an original contribution to historical knowledge and of a standard suitable for publication.

The History of Science and Technology is by its nature interdisciplinary, and students are encouraged to undertake study in related areas such as history, philosophy, and the natural and medical sciences.

Facilities
The Eisenhower Library and the Welch Medical Library contain about two million volumes, including the special collections of the Institute of the History of Medicine in Baltimore. These research facilities are supplemented by the rare book holdings at Evergreen House, the Pratt Library, and the Peabody Library.

Other important research collections are available to students. In Philadelphia, collections include the Chemical Heritage Foundation, the American Philosophical Society, and the Academy of Natural Sciences. The Hagley Museum and Library’s collections in the history of American science and technology are within easy distance of campus, as are the incomparable holdings of the Smithsonian Institution, the Library of Congress, the National Library of Medicine, and other governmental agencies in Washington, D.C.

Financial Aid
The department has several graduate fellowships and teaching assistantships. Students may also be eligible for federal financial support through the National Science Foundation. Information on these and other fellowships can be obtained through the fellowship advisor at the student’s college, or from the Fellowship Office of the National Academy of Sciences, National Research Council, Washington, D.C. 20025. In the recent past, doctoral candidates have also won support for their research in the United States and abroad through such sources as the Smithsonian Fellowships, the Fulbright-Hays grants, the Spencer Foundation, and the Deutscher Akademischer Austauschdienst (DAAD) Fellowship.

For current faculty and contact information go to http://host.jhu.edu/people/

Faculty
Chair
Maria Portuondo
Associate Professor: History of science, science and exploration, science and technology in Latin America, early modern Spanish and Latin American Cosmography and geography.

Professors
Robert H. Kargon
Willis K. Shepard Professor of the History of Science: history of physics; science and social change; science in America.

Sharon Kingsland
History of biology, especially ecology, genetics and behavioral biology; science in America.

Stuart W. Leslie
History of technology, history of science-based industry.

Gianna Pomata
Drew Professor of the Humanities, history of chemistry and alchemy, early modern science, science and religion.

Assistant Professors
Yulia Frumer
History of science, Japanese history.

Joris Mercelis
History of modern technology, especially technology related to chemical industries.

Affiliated Faculty School of Medicine
Nathaniel C. Comfort
Professor: history of biology, especially genetics, molecular biology, and biomedicine; history of recent science, oral-history and interviewing. Current project: History of human and medical genetics in America.

Mary E. Fissell
Professor: European health care and popular medicine, 17th and 18th centuries; early modern gender and the body.

Jeremy Greene
Elizabeth Treide and A. McGehee Harvey Chair in History of Medicine, Associate Professor: 20th century clinical medicine, therapeutics, pharmaceuticals, global health, history of disease.

Marta Hanson
Associate Professor: history of East Asian Medicine; History of Chinese science and medicine; history of epidemics and disease in China.

Graham Mooney
Assistant Professor: history of public health, 19th and 20th centuries; historical epidemiology; historical demography; disease surveillance and risk.

Randall M. Packard
William H. Welch Professor of History of Medicine: history of disease; public health; and medicine, health, and disease in Africa.

Gianna Pomata
Professor Emeritus: history of Russian medicine and science, social relations of scientific thought, history of biomedical sciences.

For current course information and registration go to https://sis.jhu.edu/classes/
Courses

AS.140.105. History of Medicine. 3.0 Credits.
Course provides an overview of the medical traditions of six ancient cultures; the development of Greek and Islamic traditions in Europe; and the reform and displacement of the Classical traditions during the Scientific Revolution.
Instructor(s): G. Pomata
Area: Humanities, Social and Behavioral Sciences.

AS.140.106. History of Modern Medicine. 3.0 Credits.
The history of Western medicine from the Enlightenment to the present, with emphasis on ideas, science, practices, practitioners, and institutions, and the relationship of these to the broad social context.
Instructor(s): G. Mooney; J. Greene; R. Packard
Area: Humanities, Social and Behavioral Sciences.

AS.140.115. Freshman Seminar: Artificial Humans. 3.0 Credits.
Looking at the history of attempts to augment or construct human beings, the course will explore the role of technology in molding human existence and shaping the definition of humanity.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.117. Freshman Seminar: Writing about Science and Medicine. 3.0 Credits.
"Scientific literature" is not an oxymoron. Doctors and scientists write, sometimes beautifully. How? Why? We will both dissect and emulate classics of this genre and discuss how literary skill can inform both patient care and laboratory practice, and how it can shape the role of science in society. Freshmen Only.
Instructor(s): N. Comfort
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.129. Freshman Seminar: Johns Hopkins Medicine. 3.0 Credits.
Johns Hopkins medicine has set the standards since the late 19th c. Learn how Hopkins reinvented medical education, public health, and hospital care and meet the people behind the famous names.
Instructor(s): S. Leslie
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.137. Freshman Seminar: Campus Life, Now and Then. 3.0 Credits.
What was it that the Hopkins undergraduates of old did all day? Before the AMRs appeared on campus, where did they live? Who played lacrosse or football? Where did they study without the D-Level? What passed for campus social life in those days before women joined the student body? Were fraternity antics all just good clean fun? Any campus pranks achieve truly epic status? Join us for a look at Hopkins history through the eyes of your predecessors. Explore the university archives and work together on an on-line exhibit for Alumni Weekend on campus life through the eyes of your predecessors. Explore the university archives and work together on an on-line exhibit for Alumni Weekend on campus life through the ages at Johns Hopkins.
Instructor(s): S. Leslie
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.144. Freshmen Seminar: Culture, Communication and Technology. 3.0 Credits.
This seminar traces the evolution and impact of oral transmission, writing, print, photography, film, and electric and electronic media.
Instructor(s): R. Kargon
Area: Humanities, Social and Behavioral Sciences.

AS.140.146. History of Public Health in East Asia. 3.0 Credits.
This course examines the history of disease, epidemics, and public health responses in East Asia from the 17th-20th centuries. This public health history emphasizes the interactions, connections, and comparisons among China, Japan, Korea, and Taiwan.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.147. Chinese Medicine: Tradition and Modernity. 3.0 Credits.
Examine Chinese Medicine's practical application as a therapy of increasing global popularity. While also examining its theoretical frameworks from antiquity to the present, healing methods such as acupuncture and herbal medicine are highlighted.
Instructor(s): J. Flowers
Area: Humanities, Social and Behavioral Sciences.

AS.140.148. From Materia Medica to Mobile Phones: The History of Global Health Technologies, 16th Century to the Present. 3.0 Credits.
This course explores case studies of technologies used in different iterations of 'global health' to understand their relationship to medical knowledge and broader historical and geographic context.
Instructor(s): K. Moore-Sheeley
Area: Humanities, Social and Behavioral Sciences.

AS.140.154. Freshman Seminar: Picture This: A Photographic History of Johns Hopkins University. 3.0 Credits.
Every picture tells a story, if you know how to read it. This freshman seminar will explore the history of Hopkins through images, creating interactive timelines of important themes in the university's history.
Instructor(s): S. Leslie
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.156. Harm City? Public Health in Baltimore, 1797 to the present. 3.0 Credits.
Explores the history of public health in urban America using Baltimore as example. Examines topics such as include infectious diseases, mental health, sanitation, rodent control, primary care, substance abuse, and STDs using frameworks of racism, classism, poverty and inequality.
Instructor(s): G. Mooney
Area: Humanities, Social and Behavioral Sciences.

AS.140.163. Jungle Doctors: Medical Missions in Africa from David Livingstone to Paul Farmer. 3.0 Credits.
Freshman seminar using a variety of primary and secondary sources, students will explore the motivations and activities of expatriates practicing medicine in Africa from the 19th century to the present.
Instructor(s): J. Cummiskey
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.165. Enlightenment Science Through Brilliant Books. 3.0 Credits.
Course explores the brilliant scientific and philosophic achievements of the 18th-century intellectual movement known as the Enlightenment through the reading of a selection of key authors (Voltaire, Franklin, the great Encyclopedists...). Includes introduction to research methods and writing in the humanities.
Instructor(s): J. Richard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.140.167. Technology and Global Health: A History from the 19th century to the Present. 3.0 Credits.
This course explores the intersection of technology and health through three historical periods: colonial medicine (19th c.), international health (post-War era), and global health (late 20th century to present).
Instructor(s): H. Morefield
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.176. Public Health in East Asia Through Films & Documentaries. 1.0 Credit.
This course uses contemporary films and documentaries to address issues in public health in East Asia, past & present. Topics covered include medicine in turn-of-the-twentieth century Japan and China, revolutionary medicine, STDS, mental illness, HIV/AIDS in China, industrial pollution, the politics of universal health care insurance, and pandemics in East Asia.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences.

AS.140.213. Topics in Biomedicine. 3.0 Credits.
What are some of the main issues and fields that defined medical research and practice after 1945? What were the new physical, technological, and conceptual tools that defined the postwar era of medicine? How did new technologies and research endeavors configure new ways of diagnosing disease, monitoring patients, and delivering medical care and therapies? As students consider the rise of genetics and genetic therapy and organ transplantation as well as the broad implementation of electronics and digital computers after 1945, they will also consider the cultural, social, ethical, and policy-related implications of these various innovations that make up the rise of biomedicine. One main goal of the course is to give students an historical understanding—at least from the last eighty years—of why medical care and therapeutic possibilities are what they are today.
Instructor(s): N. Anderson
Area: Humanities, Social and Behavioral Sciences.

AS.140.226. Aviation in America. 3.0 Credits.
This course surveys manned flight in America, with particular emphasis on how technological changes and sociocultural events have influenced one another in the development of aircraft.
Instructor(s): L. Karafantis
Area: Humanities, Social and Behavioral Sciences.

AS.140.301. History of Science: Antiquity To Renaissance. 3.0 Credits.
The first part of a three-part survey of the history of science. This course deals with the origins, practice, ideas, and cultural role of scientific thought in Graeco-Roman, Arabic-Islamic, and Medieval Latin/Christian societies. Interactions across cultures and among science, art, technology, and theology are highlighted.
Instructor(s): G. Ferrario; L. Principe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.302. Rise Of Modern Science. 3.0 Credits.
Survey of important achievements in modern science from Newton to the Hubble Space Telescope, with topics drawn from physics, chemistry, biology, astronomy, and geology. Examines how science has shaped the modern world.
Instructor(s): J. Mercelis; S. Kingsland
Area: Humanities, Social and Behavioral Sciences.

AS.140.305. From the Compass to Androids: History of Science, Technology, and Medicine in Asia. 3.0 Credits.
The course explores the history and cultural context of science, medicine, and technology in East Asia, from the ancient Chinese science to the latest scientific and technological developments in Japan.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences.

AS.140.311. Ecology, Health, and the Environment. 3.0 Credits.
Explores diverse problems linking ecological, environmental and public health themes, with focus on Chesapeake region. Students’ research projects can be outside Chesapeake region.
Instructor(s): S. Kingsland
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.313. Psychopolitics: Science, Mind, and Society. 3.0 Credits.
This course explores the history of psychiatry and the mind sciences as social and political institutions in the United States, from the country’s founding to the present. Each class meeting will explore a set of “alternative facts” emerging in the setting of a landmark political dispute in US history. Students will read, discuss, and research claims made by competing scientific experts about who should participate in American society and to what extent. Overall, the course is geared toward students interested in making sense of the exchange between scientific knowledge and social politics.
Instructor(s): S. Scharff
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.320. Modernity on Display: Technology and Ideology at World’s Fairs. 3.0 Credits.
Seminar focuses on ideological at World’s Fairs over technological modernity with special emphasis upon World War II and the Cold War.
Instructor(s): A. Mololla; R. Kargon
Area: Humanities, Social and Behavioral Sciences.

AS.140.321. Scientific Revolution. 3.0 Credits.
Explore how the Western understanding of nature changed between 1500 and 1720 through the works of astronomers and astrologers, naturalists and magi, natural philosophers and experimentalists, doctors and alchemists & others.
Instructor(s): M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

AS.140.322. Follow the money: Science, technology, and the ‘knowledge economy’, c.1800-present. 3.0 Credits.
This course examines the historical emergence of knowledge-driven economies, paying special attention to the funding, development, and use of science and technology for commercial purposes.
Instructor(s): J. Mercelis
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.324. Commercializing Science: Academic Entrepreneurs from Kelvin to Venter. 3.0 Credits.
From the nineteenth-century physicist William Thomson (Lord Kelvin) to contemporary geneticists such as Walter Gilbert and Craig Venter, academic scientists and engineers across a broad range of disciplines have created their own companies. This course examines the motives behind these entrepreneurial ventures, the strategies employed, and the factors influencing their success.
Instructor(s): J. Mercelis
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.140.326. Debating Evolution: From Darwin to Sociobiology. 3.0 Credits.
Charles Darwin's theory of evolution transformed the field of biology and raised profound moral and spiritual questions. We examine how Darwin's ideas permeated not only science, but also literature, religion, the social sciences, and politics during the 19th and 20th centuries. We also explore debates about eugenics and sociobiology.
Instructor(s): E. Raymer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.327. Science and Utopia. 3.0 Credits.
Seminar examines the changing role of science in planning the ideal community from the 17th century to the present. Readings include works by Campanella, Bellamy, H.G. Wells, Orwell, B.F. Skinner and Walt Disney.
Instructor(s): R. Kargon
Area: Humanities, Social and Behavioral Sciences.

AS.140.328. Science and Technology in Slave Regimes. 3.0 Credits.
What does science and technology look like in slave regimes? This seminar explores this question from a trans-national perspective by comparing cases in the Antebellum US, Cuba, Brazil and other countries.
Instructor(s): M. Portuondo; R. Kargon
Area: Humanities, Social and Behavioral Sciences

AS.140.331. Mind, Body and Society: The History of Psychology. 3.0 Credits.
We will explore various modern approaches to the relationship of mind, body and society; to the nature of scientific psychology and its realtionship to human values.
Instructor(s): D. Todes
Area: Humanities, Social and Behavioral Sciences.

AS.140.333. What it Means to be Human: Perspectives in the History of Anthropology, 1860-1995. 3.0 Credits.
This course explores the changing scientific, social, and cultural ideas that shaped how anthropologists and other scholars approached the study of human beings from the mid-nineteenth through the twentieth centuries.
Instructor(s): A. Link
Area: Humanities, Social and Behavioral Sciences.

AS.140.344. Rejected Knowledge? Alchemy and Astrology in Early Modern European Science and Medicine. 3.0 Credits.
This course surveys the rise and fall of alchemy and astrology in early modern Europe. Topics include chemical and astrological medicine, prognostication, and the quest for the Philosopher's Stone.
Instructor(s): J. Rivest
Area: Humanities, Social and Behavioral Sciences.

AS.140.345. Animal Minds: Beyond the Black Box. 3.0 Credits.
How do migratory birds and fish find their way home? Do honeybees communicate using a “dance language”? Do chimpanzees have mental lives akin to those of human beings? How do scientists attempt to answer such questions, and why was the “animal mind” a taboo for over 50 years in American science? Focusing on ethology and psychology from Darwin to the present, this course examines the history of the study of animal cognition and behavior. A major emphasis throughout the course will be on the question of animal consciousness from the late-19th through the 20th century.
Instructor(s): R. Nash
Area: Humanities, Social and Behavioral Sciences.

AS.140.346. History of Chinese Medicine. 3.0 Credits.
Students will study the most recent anthropological, philosophical, and historical scholarship on medicine in traditional and modern Chinese society. They will approach the topic from several angles including medical pluralism, the range of healers, domestic and literate medicine, gender, emergence of new disciplines, public health and the history of disease. The course relies on secondary sources and primary sources in English translation. Cross-listed with East Asian Studies.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.347. History Of Genetics. 3.0 Credits.
Intellectual and social history of the gene concept, including Mendelism, eugenics, medical genetics, DNA, genomics, and personalized medicine.
Instructor(s): N. Comfort
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.350. Disability in 20th century America: Rights, Restrictions, Reproduction. 3.0 Credits.
Is disability a biological fact or determined by culture? This class discusses different ideas of difference in the context of disability rights, professional power, reproductive technology and bioethics. Cross-listed with Studies of Women, Gender, and Sexuality
Instructor(s): M. Schmidt
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.351. Seminar in the History of Life Sciences. 3.0 Credits.
Students do research projects with faculty supervision, on topics of their choice in the history of biological or biomedical sciences. Projects are presented to class at end of semester.
Instructor(s): S. Kingsland
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.352. Who Wants to be a Billionaire?: High Tech & the American University. 3.0 Credits.
Long before Facebook, faculty and students were creating startups on campus. This course examines college entrepreneurship from its 19th-century origins to today: the potential perils, profits, and promise for entrepreneurs and universities alike.
Instructor(s): S. Morris
Area: Humanities, Social and Behavioral Sciences.

AS.140.353. Women, Health, and Medicine in Modern America. 3.0 Credits.
This course explores women's interactions with science, medicine, and health in the late-19th and 20th century United States. It is framed by an interest in medicalization, sex/gender, and feminism. Cross-listed with Studies of Women, Gender, and Sexuality.
Instructor(s): D. Stillwell
Area: Humanities, Social and Behavioral Sciences.

AS.140.355. History of Modern Astronomy: Expanding Universes and Space Telescopes. 3.0 Credits.
Astronomy today, in its tools, techniques, practices and temperaments, bears little resemblance to astronomy in 1900. This course will cover how scientists expanded the universe in the past century and how the universe of astronomical practice expanded as well: as a profession, as an avocation, and as a cultural resource.
Instructor(s): D. DeVorkin
Area: Humanities, Social and Behavioral Sciences.
AS.140.356. Man vs. Machine: Resistance to New Technology since the Industrial Revolution. 3.0 Credits.
This course analyzes different episodes of “luddism” in the history of science and technology, from the destruction of textile machinery in the early 1800s up to recent controversies about biotechnology and ICT.
Instructor(s): J. Mercelis
Area: Humanities, Social and Behavioral Sciences.

AS.140.357. Science Fiction Movies in the East and West. 3.0 Credits.
What is a science fiction (SF) movie? How did SF movies and developments in science and technology influence each other during the twentieth century? What is the use of SF movies for societies? And why are SF movies much more popular in some countries than in others? By watching and analyzing classic and contemporary SF movies from the US, the Soviet Union, Japan, China, and other countries, we will search for answers to these questions. Special emphasis will be given to analyzing how historical, political, and cultural environments in different countries have influenced the production and acceptance of SF movies.
Instructor(s): D. Kim
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.140.362. The Communications Revolution. 3.0 Credits.
Investigates the nature and impact of phenomenal changes in transportation and communication since the 19th-century, including iconic developments such as the Panama Canal, Brooklyn Bridge, airplanes, automobiles, television, wireless communication and the internet.
Instructor(s): S. Morris
Area: Humanities, Social and Behavioral Sciences.

AS.140.368. Technological Transformations. 3.0 Credits.
Course explores the historical development of revolutionary technologies and their transformations of the individual and society. Focus on computing, biotech, consumer goods, warfare, manufacturing, agriculture, imaging, energy, transportation, and sustainability.
Instructor(s): M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

AS.140.370. History of Mental Illness and Psychiatry in Modern West. 3.0 Credits.
This course will be an introduction to the history of “madness” in modern Europe and America. In particular, it will examine the ideas that have shaped perceptions of madness, insanity, and mental illness; the changing experiences of those afflicted; the development of those professions designed to look after those deemed mad, insane, and mentally ill; and the social and cultural assumptions behind treatments, policies, and public opinions.
Instructor(s): J. Ballenger
Area: Humanities, Social and Behavioral Sciences.

AS.140.371. The History of Forensic Medicine: Medicine and the Law in Western Society, 1500-2000. 3.0 Credits.
This course explores the history of forensic medicine from some of its earliest roots to the present day, investigating everything from witchcraft trials to DNA profiling.
Instructor(s): S. LeJaqu
Area: Humanities, Social and Behavioral Sciences.

AS.140.379. Health and the City: Urban Public Health In Historical Perspective. 3.0 Credits.
This course examines the history of cities as spaces of public health concern since the nineteenth century, and seeks to understand how social, political, and economic contexts have shaped urban public health interventions.
Instructor(s): E. Anders
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.140.381. History of Reproduction. 3.0 Credits.
This course investigates the history of reproduction in American medicine, science, politics, and culture. It explores changing ideas about reproductive bodies, sexuality, and the family as well as practices of contraception, conception, and childbirth.
Instructor(s): B. Gurtler
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.140.382. Plagues and Societies in World History. 3.0 Credits.
This course examines some of the most notable epidemics in world history from the Black Death to Ebola in 2014. Topics include the origins of epidemic diseases; the relations between epemics and warfare, empires, and trade; and the sociocultural underpinnings of disease response.
Instructor(s): K. Arner
Area: Humanities, Social and Behavioral Sciences.

AS.140.390. Science and Technology in Latin America. 3.0 Credits.
The course surveys the development of western science and technology in Hispanic America (1492 to the present). We begin studying the hybridization of scientific practices between European and Native American cultures during the early colonial era and end with the transfer of technologies and industrialization of the 20th century. We emphasize the role on science and technology in state formation, the acculturation of foreign ideas in colonial and postcolonial societies, and the role of intellectual elites in modernization programs.
Instructor(s): M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

AS.140.398. Godzilla and Fukushima: Japanese Environment in History and Films. 3.0 Credits.
Juxtaposing Japanese environmental history and its reflection in popular media, the course will explore the intersection between technology, environment, and culture. The course will be accompanied by relevant movie screenings.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.140.411. Senior Research Seminar. 2.0 Credits.
Instructor(s): J. Mercelis; M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

AS.140.412. Research Seminar. 2.0 Credits.
Departmental Majors Writing a Senior Thesis Only
Instructor(s): R. Kargon; Y. Frumer
Area: Humanities, Social and Behavioral Sciences Writing Intensive.
AS.140.413. The White Plague: History of Tuberculosis. 3.0 Credits.
Examination of interrelated scientific, medical, social, and cultural
dimensions of tuberculosis from early modernity to the present in various
geographical and cultural settings. Extensive reading, research based on
primary sources. Juniors and Seniors only. Instructor’s permission for all
others. Cross-listed with History and Anthropology.
Instructor(s): D. Todes
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.415. Thinking Through Things and Thinking Things Through. 3.0
Credits.
Combining hands-on experience of using historical instruments with
primary sources analysis, the students will reconstruct the ways in which
artifacts channeled human perception of their environment.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.441. Metaphor in Science and Medicine. 3.0 Credits.
Science and medicine are permeated by metaphors. Generated by every
domain of human experience, these metaphors embed scientific and
medical thought in historically specific times, places, experiences, issues,
attitudes and cultures. We will explore the dynamics of metaphorical
thinking and examine such specific examples as "The Great Chain of
Being," Darwin's "struggle for existence" and "natural selection," the
"reflex" from Descartes to Pavlov to cybernetics, body and mind as
clock, factory and computer; illness as imbalance and invasion, and the
metaphorical associations of tuberculosis and cancer.
Instructor(s): D. Todes
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.447. Science and the City. 3.0 Credits.
This seminar explores the nature and growth of urban scientific
communities from Victorian Manchester, through geographic growth
clusters such as Silicon Valley and Route 128, to new eco-cities in China
and Abu Dhabi.
Instructor(s): J. Mercelis; R. Kargon; S. Leslie
Area: Humanities, Social and Behavioral Sciences.

AS.140.461. Scripta Manent: Manuscript Cultures East and West. 3.0
Credits.
This seminar looks at manuscripts both as physical objects and as
cultural products, through an analysis of their ways of production,
material features, and uses in different cultures and contexts. Meetings
will be devoted to the codicology, paleography, and philology of
manuscripts with a particular focus on the Greek, Latin, Arabic, Hebrew
and Judaeo-Arabic traditions. Indian, Chinese and Japanese contexts
will complement the focus of the seminar and provide elements of
comparison and wider framing. The seminar will also address recently
developed digital tools for the study of manuscripts and provide students
with a set of skills and tools for approaching and using manuscript
material effectively. The seminar will include hands-on sessions, with
viewing of original manuscripts from the rich collections of the Sheridan
Libraries and the Walters Art Museum.
Instructor(s): G. Ferrario
Area: Humanities, Social and Behavioral Sciences.

AS.140.501. Independent Study. 3.0 Credits.
Instructor(s): J. Mercelis; S. Kingsland.

AS.140.502. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): G. Mooney; M. Fissell; S. Leslie; Y. Frumer.

AS.140.597. Research - Summer. 3.0 Credits.
Instructor(s): Staff.

AS.140.598. Summer Internship. 1.0 Credit.
Instructor(s): S. Leslie.

AS.140.599. Independent Study-Summer. 3.0 Credits.
Instructor(s): M. Portuondo; S. Leslie.

An introductory course at the graduate level to the interpretation of
historical evidence, analysis of historical data; and to contemporary
methods in the history of science, medicine, and technology.
Instructor(s): S. Kingsland.

AS.140.618. Seminar in the History of Life Sciences.
For graduate students preparing fields in history of science.
Instructor(s): S. Kingsland.

AS.140.641. Departmental Colloquium.
Reports by staff members, students, and invited speakers.
Instructor(s): J. Mercelis.

AS.140.642. Colloquium.
Reports by faculty, students, and invited speakers.
Instructor(s): S. Kingsland.

AS.140.655. Early Modern Science in France.
This seminar examines 17th- and 18th-century French science
and medicine and their social, political, and institutional contexts.
Participants will write a paper or dissertation chapters for discussion.
Reading knowledge of French required.
Instructor(s): L. Principe.

AS.140.659. Looking Back at Science of Tomorrow.
The course will look at the history of science through the lens of science
fiction, and explore the role of scientific imagination in the development
of sciences.
Instructor(s): Y. Frumer.

AS.140.661. Scripta Manent: Manuscript Cultures East and West.
This seminar looks at manuscripts both as physical objects and as
cultural products, through an analysis of their ways of production,
material features, and uses in different cultures and contexts. Meetings
will be devoted to the codicology, paleography, and philology of
manuscripts with a particular focus on the Greek, Latin, Arabic, Hebrew
and Judaeo-Arabic traditions. Indian, Chinese and Japanese contexts
will complement the focus of the seminar and provide elements of
comparison and wider framing. The seminar will also address recently
developed digital tools for the study of manuscripts and provide students
with a set of skills and tools for approaching and using manuscript
material effectively. The seminar will include hands-on sessions, with
viewing of original manuscripts from the rich collections of the Sheridan
Libraries and the Walters Art Museum.
Instructor(s): G. Ferrario.

AS.140.662. Research Seminar in the History of Science: The Laboratory
in Theory and Practice since the 17th century.
This seminar traces the evolution and impact of the laboratory in the
natural and social science 1600-2000.
Instructor(s): L. Principe, R. Kargon.

AS.140.663. Crossing Boundaries: Studies in Comparative History.
Course takes a comparative look at how scientific ideas, practices,
methods, technologies are translated across disciplinary, institutional,
and national borders.
Instructor(s): R. Kargon; S. Kingsland.
AS.140.665. History of Science and Technology in Asia.
Graduate level discussion of major historiography of science and technology in East Asia.
Instructor(s): Y. Frumer.

AS.140.667. Special Topics in the History of Physics.
This seminar will focus upon the history of electromagnetism, heat and energy, mechanics and the transition to modern physics, 1800-1920.
Readings, discussion, papers.
Instructor(s): R. Kargon.

AS.140.668. Technology in Context.
The course will explore topics in the history of technology focusing on a variety of methodologies pertinent to the subject.
Instructor(s): J. Greene; Y. Frumer.

AS.140.669. Special Topics in the History of the Physical Sciences.
This seminar will focus upon the history of the physical sciences.
Readings, discussion, papers.
Instructor(s): R. Kargon.

AS.140.670. Special Topics in the History of Physics in Higher Education.
This seminar will focus upon the history of the establishment of physics in US higher education 1870-1940.
Readings, discussion, papers.
Instructor(s): R. Kargon.

AS.140.673. The Modern Synthesis in Historical Perspective.
Research seminar in history of evolutionary biology
Instructor(s): S. Kingsland.

AS.140.674. Science and Medicine in Early Modern Atlantic World Culture.
How were changes in scientific and medical ideas reflected in cultural products of the early modern Atlantic world? We will study these ideas as they appeared in literary genres such as poetry, utopias, natural histories and travel narratives. Likewise, we will examine the visual culture of the Atlantic space for clues about changing conceptions about the natural world. Our expedition will encompass Anglophone, French and Hispanic regions, and will pay careful attention to hybrid cultural products that reflect the interaction between indigenous cultures and the (changing) European understanding of the natural world.
Instructor(s): M. Portuondo.

Seminar will examine the development of an industrial culture in the early 20th century. Topics will include the role of science in the second Industrial Revolution, culture and industrial spirit, the impact of technology and science on the arts and representations of science and technology in museums and popular culture.
Instructor(s): R. Kargon.

AS.140.676. Environmental Engineering in Historical Perspective.
Restricted to graduate students in History of Science and Technology who are completing fields.
Instructor(s): S. Kingsland.

AS.140.677. Practical History of Science.
History of science often engages with technical and practical material. Although there are multiple ways of dealing with sources, one crucial one—sometimes neglected in more recent work—is understanding these aspects in a critical way, thinking or practicing with historical actors. This graduate seminar explores reasons and methods for doing so, includes in-depth readings of technical material from various periods and experimental reconstructions, and reviews how such an approach can deepen our historical understanding.
Instructor(s): L. Principe.

AS.140.678. Industrial Society.
Topics will include the role of science in the early 20th century. Topics will include the role of science in the early 20th century and its impact on society, industry, and the universities, and Renaissance hermeticism/natural magic.
Interactions across science, art, technology, and theology are highlighted.
Lecture meets with AS.140.301
Instructor(s): L. Principe.

Survey of history of science, 18th-20th c. Students are encouraged to attend lectures for 140.302, but seminar may be taken without attending those lectures.
Instructor(s): S. Kingsland.

AS.140.710. Scientific Revolution.
Reading intensive seminar that studies the events and ideas that transformed western science from Medieval natural philosophy to the experimental sciences (1500-1720s). Lecture meets with AS.140.321.
Instructor(s): M. Portuondo.

Instructor(s): R. Kargon.

AS.140.802. Directed Readings & Diss.
Instructor(s): R. Kargon.

AS.140.803. Independent Study-Summer.
Instructor(s): S. Kingsland.

Instructor(s): S. Kingsland.

AS.140.812. Directed Readings & Diss.
Instructor(s): S. Kingsland.

Instructor(s): S. Leslie.

AS.140.832. Directed Readings & Diss.
Instructor(s): S. Leslie.

Instructor(s): L. Principe.

AS.140.836. Directed Readings & Diss.
Instructor(s): L. Principe.

Instructor(s): M. Portuondo.

AS.140.842. Directed Readings & Diss.
Instructor(s): M. Portuondo.

AS.140.843. Directed Reading & Dissertation.
Instructor(s): Y. Frumer.

AS.140.844. Directed Reading & Dissertation.
Instructor(s): Y. Frumer.

AS.140.845. Directed Readings and Dissertation.
Instructor(s): J. Mercelis.

Instructor(s): J. Mercelis.

Instructor(s): R. Packard.

AS.140.854. Directed Readings & Diss.
Instructor(s): R. Packard.
AS.140.863. Directed Reading and Dissertation.  Instructor(s): G. Pomata.


AS.140.874. Directed Readings & Diss.  Instructor(s): N. Comfort.

AS.140.875. Directed Readings & Dissertation.  Instructor(s): M. Hanson.

AS.140.876. Directed Reading & Dissertation.  Instructor(s): M. Hanson.

AS.140.877. Directed Reading & Dissertation.  Instructor(s): J. Greene.

AS.140.878. Directed Readings and Dissertation.  Instructor(s): J. Greene.


AS.140.892. Dir Rdg & Dissertation.  Instructor(s): D. Todes.


AS.140.894. Directed Readings & Diss.  Instructor(s): M. Fissell.


AS.140.896. Directed Readings & Diss.  Instructor(s): G. Mooney.

Cross Listed Courses

History of Art
AS.010.707. Therapies of Art and Literature in Early Modern Europe.  This seminar examines the myriad ways art and literature in Early Modern Europe addressed itself to its audiences as a form of therapy. Taking as our point of departure Petrarch's neo-Stoic therapy of the passions, the revival of consolatio literature, and the development of new Christian "wisdom" genres aimed at ethical self-cultivation, we consider how artists participated in the care of the body, the soul, and the self, innovating therapies that were at once sacramental and philosophical, spiritual and ethical. Intersections with the history of medicine will prompt us to inquire into the transposition of physiological and psychological theories, practices, and metaphors into the arena of ethical-spiritual therapy.  Instructor(s): M. Merback.

Anthropology
AS.070.352. Evolution, Ecology, Becoming.  3.0 Credits.  The concept of evolution is central to social theory. Originating in the question of the species, it has moved into questions of human ecology, cultural forms and modes of thought. While it remains a deeply contested, often criticized concept, particularly in its neo-Darwinian manifestation, it orients anthropological thinking in ways that are as yet to be examined. Reaching into the archives of anthropology and other cognate disciplines, this course will examine the writings of Lyell, Darwin, Marx, Morgan, Boas, Steward, Bateson, Ingold among others. Co-listed with AS.070.610  Instructor(s): A. Goodfellow; N. Khan  Area: Humanities, Social and Behavioral Sciences.

Near Eastern Studies
AS.130.259. Ancient Science.  3.0 Credits.  A survey of scientific practices and technological innovations in the ancient world, including astronomy, medicine, law, and divination. Special attention will be devoted to the relationship between magic and science during the periods covered.  Instructor(s): P. Delnero  Area: Humanities, Social and Behavioral Sciences.

Political Science
AS.190.471. The University and Society.  3.0 Credits.  In the 20th century, American universities became the envy of the world, leading in most categories of scholarly productivity and attracting students from every nation. In recent years, though, American higher education has come to face a number of challenges including rapidly rising costs, administrative bloat, corporatization and commercialization. We will examine the problems and promises of American higher education, the political struggles within the university and the place of the university in the larger society. Upper classes and Grad Students only.  Instructor(s): B. Ginsburg; R. Kargon  Area: Social and Behavioral Sciences.

German Romance Languages Literatures
AS.212.740. Proust and the Science of Memory.  What is personal memory? This course offers both an in-depth journey through Proust's Recherche and a way of tracing major scientific questions about the formation of memory in connection with autobiography and medical history. The process of human remembering -- with its counterpart, forgetting -- has emerged over the last thirty years as an extraordinarily rich field of investigation as well as of creative endeavors in the arts. Poised between literature and science, this course offers both an in-depth introduction to Proust's ground breaking modern work on human time, A la recherche du temps perdu, and an investigation into a modern history of memory (a history that unfolds in the eleventh and early twentieth century, and has made a surprising return in our contemporary understanding of remembrance). That Proust's petite madeleine should have turned, in recent years, into the magical token of autobiographical recollection and provided, at the same time, an immensely productive clinical and neuro-scientific model of how memory works serves as our point of departure. That human memory is an experience and not merely a biological function -- its existence depending on language -- will be our running thread. Proust's book, filled with immensely learned and complex descriptions of mnemonic processes, serves as our case-study. Proust's investigations into remembering reveal fascinating aspects of the 19th century advances into the psychology and nosography of memory. These will in turn prompt us to read his work in light of present controversies in scientific research, as for example on the construction of memory, on "body-memory," the interface between cognition and emotion, and the mind/brain debate. As it prompts many questions on the relation between fiction and experience, this journey through major themes of Proust's quest for memory will invite a broader reflection on the relation between literary and philosophical investigations. Requirements: Short oral presentation and final research paper. Taught in English, reading knowledge of French desirable but not required. Most readings are available in English. Required for this course are vol. I, V, VI of In Search of Lost Time in the 2003 Modern Library edition (ISBN 978-0-375-75154 – 1 and 4 and 7). For a copy of the syllabus, with a list of main recommended readings, available in mid-June, please write to e.ender@jhu.edu  Instructor(s): E. Ender  Area: Humanities.
Interdisciplinary Studies

The undergraduate major in interdisciplinary studies allows students to combine disciplines in Krieger School of Arts and Sciences to develop a major focused on a particular topic or intellectual theme. Therefore, courses proposed for this interdisciplinary major must have coherence and build toward a rich exploration of a clear set of principles or questions.

Requirements for a B.A. Degree with a Major in Interdisciplinary Studies

Also see Requirements for a Bachelor’s Degree (p. 7).

Students in the humanities and social sciences who wish to design their own major or who wish to divide their studies between departments, may create their own program in Interdisciplinary Studies. This interdisciplinary major may straddle several traditional disciplines but must maintain a substantive theme or focus. For example, a student interested in the American Revolutionary period may construct a curriculum including courses from History, English, History of Art, and Sociology. Another may wish to focus on children in poverty, drawing from Anthropology and Economics. Proposals for the interdisciplinary major should be submitted at the end of the sophomore year.

This major requires the support of a faculty advisor and the approval of the Arts and Sciences Curriculum Committee. A student wishing to complete this major must work with a full-time faculty member from the Homewood campus to construct a curricular plan that includes courses representing 45 to 60 credits. These courses can include all related prerequisites and related courses, such as language study. Independent study, research, and internships may be included. Twenty-one credits must be earned at the 300-level or higher. Courses from the School of Engineering are not permitted, except by petition.

The proposal should explain how each of these courses provides insight on the given topic, concept, issue, time period, etc. There is no need to defend the principle of interdisciplinary study, as that is a given, but the student must explain how the courses from two or more departments represent a conceptual whole.

After receiving approval from a sponsoring faculty advisor, the student then works with the Office of Academic Advising to finalize the proposal and to present it to the Curriculum Committee, consisting of faculty and undergraduates, who must approve the proposal by majority vote. After approval, the student continues to work with the faculty advisor and Academic Advising to oversee completion of requirements.

Rules:

- Students pursuing this major must still meet all other requirements for a bachelor’s degree (p. 7) in the Krieger School of Arts and Sciences.
- All courses for the major must be taken for a letter grade and students must earn a C- or better in courses completing major requirements.
- Students must earn 45-60 credits in the completion of the major.
- At least 21 credits must be completed at the 300-level or higher and may not be counted toward another major or minor.
- Courses offered by the School of Engineering may not be included in major requirements. (Some minor exceptions may be permissible.)
International Studies
http://krieger.jhu.edu/internationalstudies

The International Studies major is an interdisciplinary program drawn from the departments of political science, history, economics, languages, sociology, and anthropology. There are three programs in International Studies: a regular undergraduate major leading to the B.A. degree in four years, and two accelerated programs leading to a B.A. and M.A. degree in five years. One of the accelerated programs is in partnership with the Johns Hopkins School of Advanced International Studies in Washington, D.C. and the other is with political science institute Sciences Po in Paris. The three programs, and all other aspects of the International Studies Program, are described on the International Studies website.

Requirements for the B.A. Degree
Also see Requirements for a Bachelor's Degree. (p. 7)

Students considering a major in International Studies should begin introductory courses required of the major early in their college careers. Choices may include an introductory history course at the 100-level, AS.180.101 Elements of Macroeconomics-AS.180.102 Elements of Microeconomics, and one of the core political science courses.

Major Requirements
The international studies major is comprised of three main components:

- Foreign language study
- Core courses in history, political science, and economics
- A focus area of the student’s choosing

In addition, students must earn a grade of C- or better in all courses applied towards major requirements and courses may not be taken satisfactory/unsatisfactory. Students must also complete at least 5 courses of major requirements at the 300 level or higher within the history, political science, and/or economics components of the major. This excludes courses used to fulfill the language requirement and focal area.

Foreign Language
Language proficiency through the second semester of the advanced/third-year level is required. If students have proficiency above the advanced/third-year level, they must take either: Option (A), two semesters of an upper level literature or culture course offered by the language departments and taught in the language of proficiency, or Option (B), take two semesters of another language. Students entering with native proficiency in a foreign language (as determined by the Center for Language Education or the Department of German and Romance Languages and Literatures) are required to complete Option B. Waivers indicating advanced level/third-year language proficiency must be documented in the student’s official academic record in order for a student to be eligible to complete Option A or B. To receive these waivers, students must contact the Center for Language Education or the Department of German and Romance Languages & Literatures to complete a proficiency exam on campus.

Core Courses
Courses fulfilling the specific requirements below are listed on the International Studies website (http://krieger.jhu.edu/internationalstudies/courses).

- Five courses in history, including one introductory course at the 100-level from the History Department at Johns Hopkins University.

Four out of the five courses must be Global history (identified by the POS-Tag INST-GLOBAL on the course description in the schedule of classes).

- One Gateway course: AS.190.111 Introduction to Global Studies, AS.190.209 Contemporary International Politics, or AS.230.150 Issues in International Development
- One course in international relations (POS-Tag INST-IR)
- One course in American politics (POS-Tag INST-AP)
- Two courses in comparative politics (POS-Tag INST-CP)
- One course in political theory (POS-Tag INST-PT)
- Four courses in economics. One must be an internationally-oriented course identified by the POS-Tag INST-ECON on the course description in the schedule of classes. Two courses must be AS.180.101 Elements of Macroeconomics and AS.180.102 Elements of Microeconomics. The final course may be of the students’ choosing from courses offered in the Economics Department at Johns Hopkins University.

Focus Area Specialization
Every major in International Studies selects a specialization area, which consists of four semester courses within a coherent field of interest. Specialization fields may be organized in terms of area (e.g., Latin America, East Asia), theme (e.g., security studies, international economics), or language (e.g., Mandarin, Arabic). These courses may not overlap with other requirements of the major.

Major Requirements:

Foreign Language Study
Two courses beyond the intermediate level or, if proficient based on exam, two additional language courses

One Gateway Course
AS.190.111 Introduction to Global Studies 3
or AS.190.209 Contemporary International Politics
or AS.230.150 Issues in International Development

Political Science Courses
One international relations course 3
One American politics course 3
Two comparative politics courses 6
One political theory course 3

Economics Courses
AS.180.101 Elements of Macroeconomics 3
AS.180.102 Elements of Microeconomics 3
One AS.180.xxx course 3
One approved internationally-focused economics course * 3

History Courses
One AS.100.1xx history course 3
Four additional history courses with the POS-Tag INST-GLOBAL 12

Focus Area
Four courses within a coherent field of interest 12

Total Credits 63-65

* Approved internationally-focused economics courses are listed each semester on the International Studies website and can be identified by the POS-Tag INST-ECON on the course description in the schedule of classes.
Sample Four Year Plan of Study

Note: Not displayed on the plan below is the requirement that at least 5 courses of major requirements be taken at the 300 level or higher within the history, political science, and/or economics components of the major. This excludes courses used to fulfill the language requirement and focal area.

**Freshman**

**Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Spring Credits</th>
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<tbody>
<tr>
<td>AS.190.209 Contemporary International Politics (or other Gateway course)</td>
<td>3</td>
<td>AS.180.102 Elements of Microeconomics 3</td>
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<td>AS.180.101 Elements of Macroeconomics</td>
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<td>4</td>
</tr>
<tr>
<td>History course AS.100.1xx</td>
<td>3</td>
<td>Comparative politics (INST-CP) course 3</td>
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<tr>
<td>Foreign language</td>
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**Sophomore**

**Fall**

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<tr>
<td>International relations (INST-IR) course</td>
<td>3</td>
<td>Political theory (INST-PT) course 3</td>
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<tr>
<td>Economics course (AS.180.xxx)</td>
<td>3</td>
<td>Focus area course 3</td>
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<tr>
<td>History course (INST-GLOBAL)</td>
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**Junior**

**Fall**

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<td>Foreign language 3</td>
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<tr>
<td>American politics (INST-AP) course</td>
<td>3</td>
<td>Comparative politics (INST-CP) course 3</td>
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<tr>
<td>History course (INST-GLOBAL)</td>
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<td>Internationally-focused economics course (INST-ECON) 3</td>
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**Senior**

**Fall**

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<tr>
<td>Focus area course</td>
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Total Credits: 77

**Double-Major and Major-Minor Programs**

Students may pursue one of International Studies’ unique double-major or major-minor programs. These are offered in conjunction with affiliated departments and allow students to concentrate their course of study within a specific department or program while simultaneously benefiting from the interdisciplinary training offered by the International Studies major.

Students pursuing a double-major program will receive a major in International Studies as well as a major in the affiliated department or program. For example, students pursuing the Global Social Change and Development track will receive a double major in International Studies and Sociology. The student’s faculty adviser will be a faculty member from the affiliated department or program.

Students pursuing a major-minor program will receive a major in International Studies and a minor in the affiliated department or program (e.g., students pursuing the Global Modernity and the Jewish Experience minor will receive a minor in Jewish Studies) and benefit from a faculty adviser in the affiliated department or program.

Successful completion of an approved double-major or major-minor program will satisfy the International Studies major’s focus area requirement.

**Senior Thesis and Honors in the Major**

International studies majors also have the opportunity to write a senior research thesis. A senior thesis is an extended original research project written under the supervision of a faculty adviser during the student’s senior year. Thesis projects are best suited for students who have an interest in exploring a specific question and/or a field of knowledge beyond their previous course work. Students may complete a senior thesis regardless of GPA; however, those students with a 3.7 GPA (or above) in their International Studies major coursework, and who complete a senior thesis, will be eligible for honors in International Studies. Theses completed for any of the major’s affiliated departments may be used to earn honors both in that departmental major and in International Studies.

**Study Abroad**

Studying abroad is especially valuable for International Studies majors. JHU encourages all IS majors to spend one or both semesters of their junior year abroad. International Studies sponsors a number of study abroad programs designed for IS majors and administers them in collaboration with the Office of Study Abroad.

The Junior Year or Semester Abroad at SAIS Europe, offered through the Bologna, Italy campus of the Paul H. Nitze School of Advanced International Studies (SAIS), allows motivated International Studies majors to spend all or part of their junior year taking graduate level classes. Students who spend their junior year or a semester in Bologna and subsequently apply for graduate studies at SAIS will receive advanced credit at SAIS for part of their work.

A similar exchange program with the French political science institute Sciences Po allows students to spend a semester or a year studying at one of Sciences Po’s seven regional campuses: Paris, Menton, Reims, Poitiers, Le Havre, Nancy, or Dijon. Courses are offered in English as well as French and thus are open to students regardless of their knowledge of French. One of Europe’s most prestigious universities, Sciences Po has a strong international focus and allows students to develop a cross-cultural and transatlantic perspective, while simultaneously offering unique access to the field of international affairs.

Additionally, the Office of Study Abroad offers a wide range of study abroad opportunities across the globe tailored to students’ specific interests.
Five-Year Accelerated B.A./M.A. Program with the Paul H. Nitze School of Advanced International Studies (SAIS)

For students wishing to pursue a master's degree after graduation from Hopkins, the university offers an accelerated and competitive International Studies B.A./M.A. Program drawing upon its resources at SAIS, located in Washington, D.C. Combining a liberal arts curriculum with a strong specialization in international studies, the program allows those enrolled to receive the B.A. and M.A. degrees in five years instead of the usual six.

Approximately eight sophomores are selected for the program each year. Admission is limited to those majoring in International Studies, Political Science or East Asian Studies (Nanjing, China campus only) and who are highly motivated toward careers for which a background in international studies is essential: research, teaching, or practice in international affairs. Financial assistance is available to those admitted based on need and on academic achievement. For more information go to http://krieger.jhu.edu/internationalstudies/bama-programs/bama-program-with-sais/.

Students admitted to SAIS through the Direct Matriculation Program (DMP) may be subject to additional requirements. https://apply.jhu.edu/apply/direct-matriculation-programs/

Five-Year Accelerated B.A./M.A. Program with Sciences Po

Students may also apply to participate in a five-year accelerated B.A./M.A. program with Sciences Po, one of Europe's finest schools of political science. The B.A./M.A. Program is aimed principally at students who are interested in international affairs and who would like to develop their intellectual and professional capabilities from an international and multidisciplinary perspective. After the junior year, students spend two years at Sciences Po's Paris campus completing graduate-level coursework at the Paris School of International Affairs (PSIA), which houses the majority of Sciences Po's internationally-oriented master's programs. PSIA is a bilingual institution, thus students may choose to pursue either an English or French track. Students may also elect to pursue a master's degree at the School of Journalism, School of Communication, or School of Law. Students interested in an academic career may also choose to pursue a research master's with the Doctoral Program at Sciences Po. Students who are not proficient in French will also pursue French language training during their course of study.

Applicants follow an application and review process similar to the one for the SAIS program. Approximately three to four sophomores are selected each year for the Sciences Po program. Students pay tuition to Johns Hopkins for the first year in Paris and to Sciences Po for the second. Financial aid from Johns Hopkins continues only through the end of a student's fourth year.

Progress toward the B.A./M.A. Degrees

Students in both programs described above spend their first three years at the Homewood campus and the last two at either SAIS or Sciences Po. Students receive the B.A. degree at the end of their first year at either SAIS or Sciences Po and the M.A. at the end of their second year.

Students selected for either of the accelerated programs may not study abroad during their Homewood years, with the exception of summer or intersession programs.

For current faculty and contact information go to http://krieger.jhu.edu/internationalstudies/directory/

Faculty

Director
Sydney Van Morgan
Director, International Centers and Programs

Advisory Board
Renee Marlin-Bennett
Liaison to the Faculty and Professor, Department of Political Science
Alessandro Angelini
Assistant Research Professor, Department of Anthropology
Lori Citti
Director, Office of Study Abroad
Marton Dornbach
Visiting Assistant Professor and Director of Undergraduate Studies, German Division, Department of German and Romance Languages and Literatures
Nicolas Jabko
Associate Professor, Department of Political Science
Yuki Johnson
Director, Center for Language Education
Adria Lawrence
Aronson Associate Professor, Department of Political Science and the International Studies Program
Michael Levens
Assistant Professor, Department of Sociology
Barbara Morgan
Senior Lecturer, Department of Economics
Gabriel Paquette
Professor, Department of History
Sarah Parkinson
Aronson Assistant Professor, Department of Political Science and the International Studies Program

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.192.110. Special Opportunities in Undergraduate Learning: Library Research & Proposal Writing Skills for International Studies Students. 1.0 Credit.

This course offers training to undergraduate students in International Studies (and related majors) on the fundamentals of library research and research/grant proposal writing. The course will introduce students to the major research resources in global studies in the humanities and social sciences, strategies and techniques to conduct effective research, and how to use library research to enhance research and grant proposal writing. This course aims to help students learn the basics of research and grant proposal writing and develop research skills for use in their major coursework and major-related research projects.
Instructor(s): Y. Ye.
Are you planning to do a research project for your independent study class, or preparing for a grant application, or working on a big research project for a research intensive class or graduation thesis, or just wishing to improve your research skills? If so, this course is for you! Through weekly two hour sessions over ten weeks, you will receive systematic training on major research tools, resources and techniques useful for any research project in international studies, political science, and other social science subjects. By the end of the course, you will be able to come up with a viable research topic, and complete a research statement that includes an abstract, problem statement and literature review based on in-depth research utilizing tools and techniques covered in the course. The skills you learn through the course will prepare you for any future research projects and advanced studies.
Instructor(s): Y. Ye.

AS.192.310. Program Abroad: Populism in Comparative Perspective. 3.0 Credits.
International Studies elective offered on the JHU Summer Program Abroad in Bologna. Open to students on the JHU Bologna Summer Program only. Permission required.
Instructor(s): S. Karatasli; S. Morgan
Area: Social and Behavioral Sciences.

AS.192.320. Colonialism and Foreign intervention in the Middle East and Africa. 3.0 Credits.
How did colonial rule and post-colonial foreign intervention shape the history and politics of states in the Middle East and Africa? The first part of this course focuses on the colonial period, examining the era of conquest, considering how and whether colonial rule differed from other types of ruling arrangements, and studying how people in colonized territories reacted to conquest and foreign rule. Part Two focuses on post-colonial foreign military interventions. Part Three considers the potential long-term consequences of colonialism and foreign intervention. The course focuses on British, French, and American imperialism.
Instructor(s): A. Lawrence
Area: Social and Behavioral Sciences
Writing Intensive.

AS.192.401. Political Violence. 2.0 Credits.
This class will function predominantly as a discussion seminar that uses the case of the Lebanese Civil War to examine the causes, duration, and dynamics of civil war as well as the debates surrounding foreign intervention and peacebuilding. Themes include: ethnic violence; economic explanations for civil war; civilian targeting; intra-rebellion dynamics; sexual and gender-based violence; election violence; occupation; peacekeeping; and the Responsibility to Protect.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences.

AS.192.402. Military Organizations in the Middle East and North Africa. 2.0 Credits.
This course will examine the diverse roles state and non-state military organizations play in MENA politics, economics, and society. Each week will use an organizational case study as a window into core themes such as military involvement in state economies, militia politics, or combatant discipline in war.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences.

AS.192.403. Qualitative Research. 3.0 Credits.
This class is designed to introduce students to qualitative methodology. Practically, students will gain first hand experience with qualitative research methods via research design, ethics review, in-depth interviewing, participant observation, and archival/primary source research. They will learn to deploy analytical techniques such as discourse analysis and process tracing. Students will also be asked to consider the merits of qualitative approaches more generally, and discuss the relative advantages of qualitative, experimental, and quantitative approaches. Questions that we will discuss include: What place should qualitative research have in a research design? Can qualitative research test hypotheses, or only generate them? Can qualitative research explain social phenomena, or only interpret them? What are the disadvantages and advantages of qualitative approaches compared to quantitative approaches? For what kinds of research questions are ethnographic techniques best suited? Is replicability possible for ethnographic field research? What criteria of evidence and analytical rigor apply on this terrain?
Instructor(s): A. Lawrence; S. Parkinson.

AS.192.501. Internship-International Studies. 1.0 Credit.
Instructor(s): S. Morgan.

AS.192.551. Program Abroad: International Studies - Leadership Seminar. 1.0 Credit.
The International Studies Leadership Seminar builds core leadership skills and introduces students to critical social, political and economic policies in their local and international contexts. The seminar takes place in different countries each year and builds upon global partnerships that exist between the International Studies Program, Johns Hopkins University, and academic institutions worldwide. Global partners include Waseda University, SAIS Europe, and Sciences Po, among others. Students engage in joint projects, panel presentations and other assignments designed to develop skills in critical analysis and public speaking. Seminar may be taken multiple times.
Instructor(s): S. Morgan.

AS.192.599. Independent Study. 3.0 Credits.
Instructor(s): S. Morgan.
AS.192.598. Independent Study. 3.0 Credits.
Approval Required.
Instructor(s): S. Morgan.
AS.192.599. Independent Study. 3.0 Credits.
Approval Required.
Instructor(s): S. Morgan.

Cross Listed Courses
Anthropology
AS.070.143. Anthropology of Markets and Capitalism. 3.0 Credits.
Capitalism is built on social and cultural processes. In this course, we explore the culture of capitalism across diverse settings — a fish market in Tokyo, an investment bank in Wall Street, and the organ donation economy in China, among many others. We ask what motivates the makers of markets today, as well as their critics.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.

AS.070.144. Markets, the State, and Capitalism. 3.0 Credits.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.
AS.070.249. Latin American Cities: Public Spaces and Private Lives. 3.0 Credits.
This course will explore the relationship between public space and forms of political expression as well as the cultural implications of various senses of privacy and domesticity in contemporary Latin American cities. Drawing on recent anthropological and historical texts, we will study the formation of urban public space in the region, as well as its use and representation by different social, political and ethnic groups.
Instructor(s): J. Richlin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.267. Culture, Religion and Politics in Iran. 3.0 Credits.
This is an introductory course for those interested in gaining basic knowledge about contemporary Iran. The focus will be on culture and religion and the ways in which they become interwoven into different kinds of political stakes.
Instructor(s): N. Haeri
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.285. Understanding Aid: Anthropological Perspectives for Technology-Based Interventions. 3.0 Credits.
This course combines anthropological perspectives with the discussion and examination of technology-based interventions in the field of development and aid policies, with particular focus on activities related to water resources, sanitation, and hygiene. Readings and discussions analyze some of the theoretical, historically rooted, and practical issues that challenge those who hope to provide effective aid. A key aim of this course is to provide students with better understanding of cultural, social, environmental and economic issues relevant to technical intervention in developing countries.
Instructor(s): E. Cervone; W. Ball
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.295. Conflict and Security in a Global World. 3.0 Credits.
Students will be introduced to problems of global governance in the context of transnational conflicts, changing nature of war, new epidemics and pandemics, and the threats of planetary extinction. What are the ways security is imagined and what kinds of political passions are mobilized for security of people versus security of states.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.296. Introduction to Migration Studies. 3.0 Credits.
How can we understand the city from positions of marginality and risk? What challenges does urban living pose to its most vulnerable residents? We will examine these questions, and methodological and conceptual issues they raise, with anthropological research from five cities: Johannesburg, São Paulo, Ibadan, New York, Kuala Lumpur. We will explore each city from the perspective of particular residents and the specific struggles they face, including crime and security, economic uncertainty, and sexual discrimination.
Instructor(s): J. Richlin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.302. Crisis and Futurity: New Ethnographies of Africa. 3.0 Credits.
"Africa Rising" or "The Hopeless Continent?" Within the span of a decade, The Economist magazine famously declared each to be true. In this class we turn to the genre of ethnography, with its focus on lived experience and critical nuance, to make sense of this seeming contradiction. We explore the themes of crisis and futurity through new works by Mbembe, De Boeck, Obarrío, and others.
Instructor(s): M. Degani
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.314. Activism and Assembly, Local and Global Connections. 3.0 Credits.
This course offers an anthropological perspective on political mobilization and struggles for social change and citizenship rights in several regions of the world. It charts collective action among the urban poor, indigenous peoples, queer rights activists, feminists, environmentalists and grassroots groups in various cultural and political contexts, to examine methodologies, representations, and local and global networks.
Instructor(s): V. Procupéz
Area: Humanities, Social and Behavioral Sciences.

AS.070.318. The Atlantic World. 3.0 Credits.
This seminar explores the formation of the South Atlantic through a reading of historical and ethnographic texts. We examine the making of history and culture as contentious fields of struggle.
Instructor(s): A. Angelini
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.333. Theologies of Political Life. 3.0 Credits.
This course explores the relationship between modern political forms and theological traditions. Looking at developments both in the West and the postcolonial world, we will examine the multiple ways in which theological traditions have continued to inform how political life is conceived and pursued. In particular, we will focus on the relation between liberalism and the Christian tradition; the turn to messianism in critical theory; the transformation of the shari?a into a legal form; and its imbrication in anti-colonial politics.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.359. Korean War. 3.0 Credits.
This course takes the Korean War as a site to both explore: 1) contemporary historical and political transformations in East Asia and globally and 2) the ways in which violence, catastrophic loss, and separation are woven into everyday life. It will explore the Korean War through film, fiction, historiography, and draw on comparative materials in anthropology.
Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.070.380. Slumworld: Life in informal Settlements. 3.0 Credits.
One quarter of the planet’s urban population lives today in slums, shantytowns, favelas, chawls, colonias and other forms of rudimentary settlements (according to UN Habitat). Despite their prevalence throughout the world, these places are still depicted as spaces of informality and abjection, rather than as sites of emergence of innovative -even if disadvantaged-, makeshift ways of producing the city. This course will combine ethnographic and geographical literature, as well as works of fiction and film to explore the lives of squatters and slum-dwellers in many regions of the world and examine in what way their practices, forms of dwelling, sociality, conflict and cooperation are constitutive of the urban experience.
Instructor(s): V. Procupez
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.417. Political Spirituality. 3.0 Credits.
This course explores forms of political action that have emerged at the interface of modern revolutions with religious traditions. It focuses on the Middle East during the twentieth century and the civil rights struggle in the American south. We will attempt to trace the genealogy of these forms of action in the Islamic and Christian traditions, as well as examine their influence on the political thought of our own time.
Instructor(s): S. Al-Bahlooly
Area: Humanities, Social and Behavioral Sciences.

AS.070.473. Readings of Foucault. 3.0 Credits.
We will do a close reading of selected texts of Foucault to track the concepts of power, subjectivity, government, and care of the self.
Instructor(s): V. Das
Area: Humanities, Social and Behavioral Sciences.

History

AS.100.102. The Medieval World. 3.0 Credits.
This course will explore selected topics in the political, economic, social, and intellectual history of Western Europe in the period between the fall of the Roman Empire and the thirteenth century. Special emphasis will be given to understanding the ways in which medieval society functioned as a pioneer civilization, compelled to reorganize itself after the almost total collapse of the ancient world, and to the interplay between material and cultural forces in the processes of social organization.
Instructor(s): G. Spiegel
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.103. Early Modern Europe & the Wider World. 3.0 Credits.
This course surveys the history of Europe and its interactions with Africa, the Americas, and Asia during the early modern period (c. 1400-1800). Topics include: the Renaissance, the Reformation, International Relations and Warfare, Colonialism, the Enlightenment, and the Age of Revolutions.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.104. Modern Europe and the Wider World. 3.0 Credits.
European history since the French Revolution. Topics include: revolutions and democratization, industrialization, nationalism, imperialism, two World Wars, fascism, decolonization, Soviet communism, and formation of the European Union.
Instructor(s): P. Jelavich
Area: Humanities, Social and Behavioral Sciences.

AS.100.105. Making America: Race, Radicalism, and Reform. 3.0 Credits.
Beginning with the end of Reconstruction and continuing through the present day, this course will examine the complicated ways in which Americans attempted to come to terms with racial, ethnic, cultural, and other forms of diversity.
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences.

AS.100.115. Modern Latin America. 3.0 Credits.
Survey of Latin American history from Independence to the present. The course will look at the meaning of nations and citizenship through the lenses of international relations, development, and identity.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences.

AS.100.117. History of Brazil. 3.0 Credits.
Instructor(s): G. Paquette
Area: Humanities.

AS.100.122. Introduction to History of Africa (since 1880). 3.0 Credits.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.123. Introduction to African History: Diversity, Mobility, Innovation. 3.0 Credits.
An introduction to African history with emphasis on diversity, mobility, and innovation. Considers both early and modern times.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.129. Introduction to Modern Jewish History. 3.0 Credits.
Jewish history 1750-present in Europe, the Near East, the US, Israel; the challenges of modernity and new forms of Jewish life and conflict from Enlightenment and emancipation, Hasidism, Reform and Orthodox Judaism to capitalism and socialism; empire, nationalism and Zionism; the Holocaust. Extensive attention to US Jewry and State of Israel.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.154. Modern Mexico from the Alamo to El Chapo. 3.0 Credits.
In this course we will use popular depictions of Mexico’s heroes and villains, tragedies and triumphs to delve into both the nation’s history and the importance of thinking historically.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences.

AS.100.201. Freshman Seminar: Prostitution in a Global Perspective, 1750-2012. 3.0 Credits.
This course examines topics such as the ‘medical model’ of prostitution regulation, the rise of international anti-prostitution, and the responses of modern nationalists to sex work in a global context.
Instructor(s): S. Stewart
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.203. Freshman Seminar: From Columbus to Calypso: The Caribbean and the Wider World. 3.0 Credits.
This course examines the history of the Caribbean and how five hundred years of colonization, slavery, piracy, rebellion, and revolution have shaped the politics and culture of the islands today.
Instructor(s): L. MacDonald
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.205. Freshman Seminar: Health, Healing, and Medicine in Africa. 3.0 Credits.
A freshman seminar introducing students to the history of health, healing, and forms of medical practice in Africa over the last two centuries.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.209. Fresh Sem: Mexico and the World from Cortés to Cartels. 3.0 Credits.
This introductory course examines Mexico’s political, economic, and cultural role in global history from the time of Spanish conquest until the twenty-first century.
Instructor(s): J. Clark
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.212. Freshman Seminar: Jews in the Medieval Mediterranean: The Politics of Conquest under Crescent and Cross. 3.0 Credits.
How can Jewish history help us understand the politics of Islamic and Christian states in Sicily, Spain, and Palestine in the age of Crusade and holy war? Freshman only
Instructor(s): B. Goldman
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.214. Freshman Seminar: Russia and the West. 3.0 Credits.
Students will consider Russian political culture and the Russian cultural tradition from Pushkin to Putin.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.215. Freshman Seminar: US-USSR Cold War. 3.0 Credits.
Focus on Stalin, Khrushchev/Truman like period but includes Brezhnev. 2 sides of cold war, write 6-7 journals of 300 wds, 2 papers of 1200 words, 2 quizzes, no midterm or final.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.219. Chinese Cultural Revolution. 3.0 Credits.
The Cultural Revolution was Mao Zedong’s last attempt to transform Chinese society spiritually and structurally. The events of this period were marked by social upheaval, personal vendettas, violence, massive youth movements, and extreme ideological pressure. This course will explore the Cultural Revolution from a variety of perspectives, focusing on the relationship between events in China from 1966-1976, and their interpretation in China and the West during the Cultural Revolution decade and since.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.220. Introduction to Latin American Political Experience. 3.0 Credits.
This course will explore Latin America's political experience from the age of imperial expansion to the present day.
Instructor(s): A. Caso Bello
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.233. History of Modern Germany. 3.0 Credits.
There is more to Germany than beer, BMWs, and Bayern Munich. We will explore politics, culture, economics and society to understand Germany and its position within Europe and the world.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.

AS.100.234. The Making of the Muslim Middle East, 600-1100 A.D.. 3.0 Credits.
A survey of the major historical transformations of the region we now call the 'Middle East' (from late antiquity through the 11th century) in relation to the formation and development of Islam and various Muslim empires. Cross-listed with Near Eastern Studies and the Program in Islamic Studies.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.236. Chinese Cultural Revolution. 3.0 Credits.
The Cultural Revolution was Mao Zedong’s last attempt to transform Chinese society spiritually and structurally. The events of this period were marked by social upheaval, personal vendettas, violence, massive youth movements, and extreme ideological pressure. This course will explore the Cultural Revolution from a variety of perspectives, focusing on the relationship between events in China from 1966-1976, and their interpretation in China and the West during the Cultural Revolution decade and since. Previously offered as AS.100.219.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.

AS.100.237. Freshman Seminar: Impeachments and Beyond: Law, Justice, and Politics in Latin America. 3.0 Credits.
This course is an introduction to legal ideas and institutions through the Latin American political experience. By the end of this course, students will be equipped with the fundamentals of Latin America's long political history (from colony to present) and will be able to identify how legal ideas and institutions change over time. Students will also gain insights on debates and conversations on the relationship between law, justice, and politics that go beyond Latin America's history.
Instructor(s): A. Caso Bello
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.241. American Revolution. 3.0 Credits.
This course provides an intensive introduction to the causes, character, and consequences of the American Revolution, the colonial rebellion that produced the first republic in the Americas, and set in motion an age of democratic revolutions in the Atlantic world. A remarkable epoch in world history, the revolutionary era was of momentous significance.
Instructor(s): P. Morgan
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.243. China: Neolithic to Song. 3.0 Credits.
This class offers a broad overview of changes in China from Neolithic times through the Song Dynasty (roughly from 5000 BCE through the 13th century CE) and will include discussion of art, material culture, and literature as well as politics and society. Close readings of primary sources in discussion sections and extensive use of visual material in lectures will help students gain firsthand perspective on the materials covered. Not open to students who have previously taken AS.100.208.
Cross listed with East Asian Studies
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences.
AS.100.246. Colonial Latin American History Survey. 3.0 Credits.  
This course offers a general survey of Colonial Latin American history, covering both Spanish and Portuguese America, from European conquest to the revolutionary wars of independence. Emphasis will be placed in exploring the nature and effects of conquest, the making of new pluricultural societies, and the eventual break of these societies from Spain and Portugal.  
Instructor(s): G. Garcia Montufar  
Area: Humanities, Social and Behavioral Sciences.

AS.100.248. Japan in the World. 3.0 Credits.  
This course is an introduction to Japan's history from 1800 to the present with emphasis on the influences of an increasing global circulation of ideas and people. Topics include the emperor system, family and gender, imperialism, World War II, the postwar economy, and global J-pop.  
Instructor(s): H. Kim  
Area: Humanities, Social and Behavioral Sciences.

AS.100.252. Invisible Borders: Exchanges and Migrations in the Modern Mediterranean. 3.0 Credits.  
This course explores the patterns of movement formed and transgressed by empire, trade, sex tourism, cultural exchange, war, and nationalism, starting from the nineteenth century to the present-day refugee crisis.  
Instructor(s): S. Rahnama  
Area: Humanities, Social and Behavioral Sciences

AS.100.254. Modern Mexico from the Alamo to El Chapo. 3.0 Credits.  
In this course we will use popular depictions of Mexico's heroes and villains, tragedies and triumphs to delve into both the nation's history and the importance of thinking historically.  
Instructor(s): C. Lurtz  
Area: Humanities, Social and Behavioral Sciences.

AS.100.255. The Haitian Revolution in World History. 3.0 Credits.  
This introductory seminar examines the revolution that transformed the slave colony of Saint-Domingue into the first black republic and second independent nation in the Americas, and its repercussions around the world. Non-Majors welcome.  
Instructor(s): N. Marvin  
Area: Humanities, Social and Behavioral Sciences

AS.100.256. Prostitution in a Global Perspective, 1750-2012. 3.0 Credits.  
This course examines topics such as the 'medical model' of prostitution regulation, the rise of international anti-prostitution, and the responses of modern nationalists to sex work in a global context.  
Instructor(s): S. Stewart  
Area: Humanities, Social and Behavioral Sciences

AS.100.265. The Medieval City. 3.0 Credits.  
This course focuses on the development and growth of medieval cities in western Europe. Students will explore the various functions of cities, uses of urban space, and challenges they faced.  
Instructor(s): N. Daniels  
Area: Humanities, Social and Behavioral Sciences.

AS.100.268. Jewish and Christian mysticism in the Middle Ages and the Early Modern Period. 3.0 Credits.  
This course will trace the historical development of Jewish and Christian mysticism between the 12th and the 17th centuries.  
Instructor(s): P. Maciejko  
Area: Humanities, Social and Behavioral Sciences.

AS.100.279. Europe since 1945. 3.0 Credits.  
This lecture course examines the political, social, and cultural history of postwar Europe with emphasis on the Cold War and the formation of the European Union.  
Instructor(s): H. Balz  
Area: Humanities, Social and Behavioral Sciences

Writing Intensive.

AS.100.282. Race & Power in Modern South Africa. 3.0 Credits.  
South African history from 1800 to the present, with focus on the rise and fall of the apartheid racial state  
Instructor(s): E. Thornberry  
Area: Humanities, Social and Behavioral Sciences

Writing Intensive.

AS.100.303. Old Regime and Revolutionary France. 3.0 Credits.  
Examines the history of France from the reign of Louis XIV to the French Revolution, focusing on early modern society, popular culture, absolutism, the Enlightenment, overseas empire, and the French and Haitian Revolutions.  
Instructor(s): M. Kwass  
Area: Humanities, Social and Behavioral Sciences

Writing Intensive.

AS.100.308. Introduction to the History of Jewish Mysticism. 3.0 Credits.  
The course will familiarize the student with the history of the main phenomena of Jewish mysticism from the ancient times to the present.  
Instructor(s): P. Maciejko  
Area: Humanities, Social and Behavioral Sciences.

AS.100.310. The French Revolution. 3.0 Credits.  
Political, social and cultural history of one of the great turning-points in European history. Previously offered as AS.100.204.  
Instructor(s): L. Mason  
Area: Humanities, Social and Behavioral Sciences.

AS.100.320. Writing U.S. Empire. 3.0 Credits.  
Attends to the composition and interpretive problems raised by studying the history of American imperialism, 1880s-1930s.  
Instructor(s): N. Connolly  
Writing Intensive.

AS.100.324. Dostoevsky's Russia. 3.0 Credits.  
Dostoevsky and the culture of his era but also echoes of his ideas of Russia, religion, ethnicity, freedom, authority, and gender from 1917 until today. Short papers, quizzes.  
Instructor(s): J. Brooks  
Area: Humanities, Social and Behavioral Sciences

Writing Intensive.

AS.100.329. Russian Imagination in Three Revolutions. 3.0 Credits.  
Russian Literature and the arts in Revolutions of 1905, 1917, and Stalin era to 1941. Req: 6 journals of 350 words, 2 papers 1250, 2 quizzes. No midterm or final.  
Instructor(s): J. Brooks  
Area: Humanities, Social and Behavioral Sciences

Writing Intensive.

AS.100.330. National Identity in 20th Century China & Japan. 3.0 Credits.  
Using primary sources, including literature and film, we will explore the changing ways in which ideologues, intellectuals, and ordinary citizens defined national identity in 20th century China and Japan.  
Instructor(s): T. Meyer-Fong  
Area: Humanities, Social and Behavioral Sciences.
AS.100.332. Persecution and Toleration in Early Modern Europe. 3.0 Credits.
Explores hostilities and fears provoked by religious diversity and deviance from orthodoxy in early modern Europe. Outlines theories, practices, and limits of early modern religious tolerance and intolerance.
Instructor(s): J. Fradkin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.342. Colonial Lives: Individuals in the Atlantic World, 1600-1850. 3.0 Credits.
This course traces the emergence of an Atlantic world, 1600-1850, through the lens of biography. Major themes include European colonization, cross-cultural encounters, slavery and trade, imperial warfare, and political revolutions. Prior experience in an introductory history course strongly recommended.
Instructor(s): W. Brown
Area: Humanities, Social and Behavioral Sciences.

AS.100.343. Diaspora, Nation, Race, and Politics. 3.0 Credits.
For millions of people across the globe, political fate in the 20th century was defined at the intersection of diaspora, race, and nation — and this may be true in the 21st century as well. This course, a collaborative effort involving a historian and a political scientist, explores the parallels and divergences in the deployment of these terms in national and transnational mobilization, literature and aesthetics, and group identity formation in Eastern Europe, Africa and the New World of the Americas. Set against the backdrop of the fall of significant empires in the late 19th and early 20th centuries, we will explore themes of migration, human rights, the nation-state system, and racism through history, political sociology, and political and social theory. We will pay particular attention to the theoretically exemplary Jewish and Black experiences of diaspora, race, and nation, engaging both with how those experiences were specially shaped by the imposition of national and racial logics and with Black and Jewish politics and thought in relation to those categories.
Instructor(s): K. Moss; M. Hanchard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.346. Soviet-American Cold War. 3.0 Credits.
The focus will be on Soviet-American interactions, Cold-War Cultures, and the impact on both societies.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.347. Early Modern China. 3.0 Credits.
The history of China from the 16th to the late 19th centuries.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.348. 20th-Century China. 3.0 Credits.
The history of China from the last years of the Qing Empire to the post-Mao reforms.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.351. Mao reforms. 3.0 Credits.
The history of China from the last years of the Qing Empire to the post-Mao reforms.
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.352. Age Of Pasternak. 3.0 Credits.
This course concerns Russian literature and the arts, including ballet, from the 1910s to the 1950s. Two short papers, journals, two quizzes, and no midterm or final.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.353. Youth and Youth Movements during 20th Century: Germany, Britain, and the U.S. 3.0 Credits.
Through texts, music, and films, this course examines the rise of "youth" as a social and cultural category in a variety of forms, ranging from spontaneous (such as Rock'N'Roll and Techno) to state-organized (Hitler Youth).
Instructor(s): H. Balz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.355. Islam between History and Anthropology. 3.0 Credits.
Co-taught by an anthropologist and a historian, this course will explore recent scholarly debates about—and critiques of—the representations of Islam and Muslim societies.
Instructor(s): N. Khan; T. Shepard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.357. Panic and Liberation: The Politics of Sex in 20th Century Europe. 3.0 Credits.
This course examines the 20th century history of sexual attitudes, desires, behaviors, identities, communities, and movements in Western Europe (most notably, Germany, France, and the United Kingdom).
Instructor(s): T. Shepard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.358. Black Code Studies: Black History and Digital Media. 3.0 Credits.
This course explores doing histories of people of African descent in an age of digital and social media. The focus will be on African-descended communities in the United States, but content will range across time space. Examples include: West African digital art communities; the use of slave trade databases to write Caribbean history; and the use of social media in social justice organizing from Paris to Baltimore. Students will explore questions of blackness, race, ethnicity, sex and sexuality, violence and justice while creating digital content using platforms like Wordpress, Omeka, Twitter, and Tumblr. Students will be evaluated on their acquisition of African American and Afro-Diasporic history; their knowledge of digital and social media platforms; and their ability to creatively and accurately relate the histories of blackness and black people to their representation and discussion online.
Instructor(s): C. Hinchliff
Area: Humanities, Social and Behavioral Sciences.

AS.100.359. Gender, Patriarchy, and the English Revolution. 3.0 Credits.
This course explores the varied experiences of gender and gender roles in seventeenth-century Britain and analyzes how these roles were challenged, changed, and sometimes upended during the English Revolution (1642-1660).
Instructor(s): C. Hinchliff
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.360. The Modern British World: Imperial Encounters, Regimes, and Resistance, from the American Revolution to the present. 3.0 Credits.
The Modern British World introduces some of the major themes and contestations tied to Britain's rise to global dominance and its ultimate decline as an imperial power.
Instructor(s): K. Hindmarch-Watson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.361. Age of Tolstoy. 3.0 Credits.
Tolstoy and his era, 1820s to 1910s. Topics include state and politics, empire, the Russian identity, and forms of cultural expression. Students consider "War and Peace" and other masterworks.
Instructor(s): J. Brooks
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.369. Themes and Concepts in Jewish History. 3.0 Credits.
The course will introduce students to the main themes and debates in Jewish historiography.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.374. Conquest, Conversion, and Language Change in the Middle Ages. 3.0 Credits.
Examines cases of imperial conquest and attendant religious transformation (Christianization; Islamization) and language change in the medieval Mediterranean (Europe and Middle East), e.g. transition from Latin to vernacular languages in Europe; Arabization; translation movements.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.382. Early Modern African Atlantic. 3.0 Credits.
This course examines the history of West and Central Africa and its diasporic people and cultures during the early modern period (c. 1400-1750) in disparate parts of the Atlantic world, including Europe, Latin America, the Caribbean, and Anglo-America. Themes include: West and Central African political and religious cultures; trans-Atlantic slavery; African Christianity; and the question of cultural survivals.
Instructor(s): E. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.387. Everyday Life in the Medieval Middle East. 3.0 Credits.
In this seminar, students will explore the daily lives of non-elites in medieval Egypt (i.e. average folk, not kings in palaces)—including their food and cooking; clothes (and government edicts regulating fashion); the houses they inhabited; their marriage patterns, divorce rates, and child custody battles; and the burden of taxes on the working poor (e.g. urban craftsmen). We will examine and discuss artifacts and documents, including surviving stufed (stuffed with recycled documents), private letters, marriage contracts (and the clauses women inserted into them), petitions for charity, and court records.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.398. Images of Postwar Japan. 3.0 Credits.
This seminar explores Japan's changing place in the world in the decades following World War II, with an emphasis on analyzing visual media such as photographs, films, advertisements, and comic books. Topics include relations with the U.S. and other countries in East Asia, particularly the two Koreas; the atomic bombings of Hiroshima and Nagasaki; and the global contexts for an expanding Japanese consumerism in the late 20th century.
Instructor(s): H. Kim.

AS.100.399. Decolonization and Citizenship in Africa, 1945-2015. 3.0 Credits.
Critically explores issues of decolonization and citizenship in Africa from WWII to the present. Emphasis on political inclusion and exclusion, and violence, fostered by nationalist movements and postcolonial African governments.
Instructor(s): P. Larson
Area: Humanities
Writing Intensive.

AS.100.403. Law & Custom in Colonial Africa. 3.0 Credits.
Examines how colonial rule transformed African legal systems, while Africans used European law for political resistance and personal gain. Research project based on colonial South African court records.
Instructor(s): E. Thornberry
Area: Humanities, Social and Behavioral Sciences.

AS.100.412. Jewish History in British Mandatory Palestine 1917-1947. 3.0 Credits.
Recent historical writing on Jewish politics, culture, and society in British Mandatory Palestine, 1917-1947. Significant attention will also be paid to work on Palestinian Arab society and politics and to Jewish-Arab-British relations.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.413. London 1580-1830: The History of Britain's capital city. 3.0 Credits.
Seminar-style class analyzing the social, cultural, gender, religious, economic, and political history of London from Shakespeare's time through revolutions, plague, fire, and commercial, colonial, and industrial expansion.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.418. Comparative Slavery: Haiti and Brazil. 3.0 Credits.
Haiti is born after a powerful slave insurrection (1804). Brazil was the last country to abolish slavery (1888). Why did these slave societies, which shared many common characteristics, have such different histories?
Instructor(s): J. Hebrard
Area: Humanities, Social and Behavioral Sciences.

AS.100.422. Society & Social Change in 18th Century China. 3.0 Credits.
What did Chinese local society look like under the Qing Empire, and how did it change over the early modern era?
Instructor(s): W. Rowe
Area: Humanities, Social and Behavioral Sciences.

AS.100.423. Multiethnic Japan. 3.0 Credits.
An advanced undergraduate seminar on the intertwined histories of race, ethnicity, and empire in Japan and its former colonies from the early twentieth century to the present.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.424. Women & Modern Chinese History. 3.0 Credits.
This course examines the experience of Chinese women, and also how writers, scholars, and politicians (often male, sometimes foreign) have represented women's experiences for their own political and social agendas. Cross listed with East Asian Studies.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
Near Eastern Studies

AS.130.170. Diplomacy and Conflict in the Ancient Middle East. 3.0 Credits.
The Middle East is home to the invention of agriculture, cities, and writing. It is also in the Middle East that we find evidence of humanity’s earliest diplomatic activity in, for instance, the actual letters sent by ancient kings to one another, the treaties drawn up after their conflicts, and the inscriptions that commemorate their conquests. In this course, we examine texts such as these to explore questions such as: How do we characterize the international system of the ancient Middle East? Does this system change over the approximately two millennia for which we have documentation? Is it better to approach ancient diplomacy through present-day eyes or in the context of ancient world-views? Is an understanding of diplomacy in the ancient Middle East relevant to our understanding of modern international relations? All texts read in translation.
Instructor(s): J. Lauinger
Area: Humanities.

AS.140.398. Godzilla and Fukushima: Japanese Environment in History and Films. 3.0 Credits.
Juxtaposing Japanese environmental history and its reflection in popular media, the course will explore the intersection between technology, environment, and culture. The course will be accompanied by relevant movie screenings.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.146. History of Public Health in East Asia. 3.0 Credits.
This course examines the history of disease, epidemics, and public health responses in East Asia from the 17th-20th centuries. This public health history emphasizes the interactions, connections, and comparisons among China, Japan, Korea, and Taiwan.
Instructor(s): D. Katz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.328. Science and Technology in Slave Regimes. 3.0 Credits.
What does science and technology look like in slave regimes? This seminar explores this question from a trans-national perspective by comparing cases in the Antebellum US, Cuba, Brazil and other countries.
Instructor(s): M. Portuondo; R. Kargon
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.398. Godzilla and Fukushima: Japanese Environment in History and Films. 3.0 Credits.
Juxtaposing Japanese environmental history and its reflection in popular media, the course will explore the intersection between technology, environment, and culture. The course will be accompanied by relevant movie screenings.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.426. Popular Culture in Early Modern Europe. 3.0 Credits.
Witchcraft, magic, carnivals, riots, folk tales, gender roles; fertility cults and violence especially in Britain, Germany, France, and Italy.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.444. Migration and the Americas. 3.0 Credits.
From the Spanish Conquest to contemporary debates in the US, this course looks at the great diversity of migrations that have shaped life in the Americas.
Instructor(s): C. Lurtz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.445. African Fiction as History. 3.0 Credits.
An exploration of Modern African history through the African historical novel.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.456. Getting Medieval? Public Violence in the Middle Ages. 3.0 Credits.
Traditional studies and popular culture often consider violence as a hallmark of medieval life and hence, present it as a fundamental difference between a ‘brutal and violent’ Middle Ages and a ‘civilized and humane’ (Western) modernity. To evaluate these claims and images, we will examine different forms of violence in medieval societies—European and Middle Eastern—especially (i) martyrdom, (ii) communal violence, and (iii) public punishment. After exploring the specific cultural meanings of these practices, we will re-examine those modern polemics that invoke ‘the medieval’ (often vis-à-vis non-Western traditions and societies).
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.
Philosophy

AS.150.205. Introduction to the History of Modern Philosophy. 3.0 Credits.
An overview of philosophical thought in the seventeenth and eighteenth centuries. We shall focus on fundamental questions in epistemology (knowledge, how we acquire it, its scope and limits), metaphysics (the ultimate nature of reality, the relation of mind and body, free will), and theology (the existence and nature of God, God’s relation to the world, whether knowledge of such things is possible): all questions that arose in dramatic ways as a result of the rise of modern science. The principal philosophers to be discussed are Descartes, Locke, Hume and Kant, though we shall also make the acquaintance of Spinoza, Leibniz and Berkeley.
Instructor(s): Y. Melamed
Area: Humanities.

AS.150.237. Foundations of Modern Political Philosophy. 3.0 Credits.
This course is an introduction to modern political philosophy through an intensive study of the classic texts. The focus will be on the nature and limits of political authority under modern social conditions. Authors included are Machiavelli, Hobbes, Locke, Rousseau and Mill.
Instructor(s): D. Moyar
Area: Humanities.

AS.150.240. Intro-Political Philosop. 3.0 Credits.
Instructor(s): C. Lebron
Area: Humanities
Writing Intensive.

AS.150.320. Marx: Critique of Political Economy. 3.0 Credits.
A close reading of Marx's Capital: Volume One. Specific attention will be given to clarification of Marx's methodology, the foundational categories of his critique of political economy, the systematic unity of his theory, and the underlying normative concepts which inform his work. No previous course in philosophy or social sciences is required.
Instructor(s): A. Abazari
Area: Humanities, Social and Behavioral Sciences.

AS.150.355. Philosophy of Law. 3.0 Credits.
In this course we will examine major issues in the philosophy of law, including the relation of law to moral theory, the role of the Constitution in legal decisions, and the justification of punishment. No previous knowledge of law or philosophy is required.
Instructor(s): D. Moyar
Area: Humanities.

AS.150.408. The Ethics of Climate Change. 3.0 Credits.
In this course we consider ethical issues related to climate change and climate change policy. These include issues about how we ought to distribute the burden of mitigation and adaption, what we owe to future generations and to our non-human world, and about our responsibilities as individuals (with respect, for example, to our diets). We briefly consider geoengineering and issues related to the widespread reliance on cost-benefit analyses in climate policy.
Instructor(s): J. McBe
Area: Humanities.

AS.150.428. Spinoza’s Theological Political Treatise. 3.0 Credits.
The course is an in-depth study of Spinoza's Theological-Political Treatise. Among the topics to be discussed are: Spinoza’s Bible criticism, the nature of religion, philosophy and faith, the nature of the ancient Hebrew State, Spinoza’s theory of the State, the role of religion in Spinoza’s political theory, the freedom to philosophize, the metaphysics of Spinoza’s Theological-Political Treatise, and finally, the reception of the TTP.
Instructor(s): Y. Melamed.

AS.150.440. The Making of Black Lives Matter. 3.0 Credits.
This course explores the history of black thought that informs the ethics of the contemporary movement for black lives.
Instructor(s): C. Lebron
Area: Humanities
Writing Intensive.

Economics

AS.180.101. Elements of Macroeconomics. 3.0 Credits.
An introduction to the economic system and economic analysis, with emphasis on total national income and output, employment, the price level and inflation, money, the government budget, the national debt, and interest rates. The role of public policy. Applications of economic analysis to government and personal decisions. Prerequisite: basic facility with graphs and algebra.
Instructor(s): R. Barbera
Area: Social and Behavioral Sciences.

AS.180.102. Elements of Microeconomics. 3.0 Credits.
An introduction to the economic system and economic analysis with emphasis on demand and supply, relative prices, the allocation of resources, and the distribution of goods and services, theory of consumer behavior, theory of the firm, and competition and monopoly, including the application of microeconomic analysis to contemporary problems.
Instructor(s): B. Hamilton
Area: Social and Behavioral Sciences.

AS.180.214. The Economic Experience of the BRIC Countries. 3.0 Credits.
In 2001, Jim O’Neill, the Chief Economist at Goldman Sachs, coined the acronym BRIC to identify the four large emerging economies, Brazil, Russia, India and China. These economies have since had an amazing run, and have emerged as the biggest and fastest growing emerging markets. In this course, we look at the economic experiences of the BRIC countries for the past 50 years. We discuss the reasons that have contributed to their exceptional growth rates, with particular emphasis on their transformation into market economies. We also analyze the challenges that these countries continue to face in their development process.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences.
AS.180.217. Game Theory in Social Sciences. 3.0 Credits.
Game Theory is the study of multiple person decision problems in which the well-being of a decision maker depends not only on his own actions but also on those of others. Such problems arise frequently in economics, political science, business, military science and many other areas. In this course, we will learn how to model different social situations as games and how to use solution concepts to understand players' behavior. We will consider various examples from different fields and will play several games in class. The emphasis of the class is on the conceptual analysis and applications and we will keep the level of mathematical technicalities at the minimum – high school algebra and one term of calculus will be sufficient. Students who took AS.180.117 are not eligible to take AS.180.217.
Prerequisites: Students may not have previously taken AS.180.102 or instructor permission
Instructor(s): Y. Chen
Area: Social and Behavioral Sciences.

AS.180.228. Economic Development. 3.0 Credits.
A comprehensive survey of economic behavior by households, farms and firms in poor countries and the role of and for governments. Discussions include measurement of income levels, economy-wide equilibrium, sources of growth, agriculture and industry, international trade and investment, savings, population, fertility, education, health, income distribution and public finances. Applies economic theory rigorously to interpret and evaluate the economic experience of poor countries. Diagnostic test on Elements of Economics is required in the second week. Grading based on 3 exams and one paper.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): M. Gersovitz
Area: Social and Behavioral Sciences.

AS.180.240. JHU Bologna: History of Banking. 3.0 Credits.
Economics course offered on the JHU Summer Program in Bologna. Permission required. Must be taken for a letter grade. Open to students on the JHU/Bologna summer program only.
Instructor(s): J. Faust; R. Barbera
Area: Social and Behavioral Sciences.

AS.180.241. International Trade. 3.0 Credits.
Theory of comparative advantage and the international division of labor: the determinants and pattern of trade, factor price equalization, factor mobility, gains from trade and distribution of income, and theory and practice or tariffs and other trade restrictions. Recommended Course Background: AS.180.101.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences.

AS.180.242. International Monetary Economics. 3.0 Credits.
This course presents International Monetary Economics theory and applies it towards gaining an understanding of recent events and current policy issues. The theory presented in this course covers a broad range of topics including exchange rate determination, monetary and fiscal policy in an open economy, balance of payments crises, the choice of exchange rate systems, and international debt. The insights provided by these theoretical frameworks will enable us to discuss topics such as the current global financial crisis, global financial imbalances, the Chinese exchange rate regime, and proposed changes in the international financial architecture.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences.

AS.180.261. Monetary Analysis. 3.0 Credits.
This course analyzes the financial and monetary system of the U.S. economy and the design and implementation of U.S. monetary policy. Among other topics, we will examine the role of banks in the economy, the term structure of interest rates, the stock market, the supply of money, the role of the Federal Reserve in the economy, the objectives of monetary policy in the United States and current monetary policy practice.
Prerequisites: AS.180.101 and AS.180.102
Instructor(s): L. Poliakova
Area: Social and Behavioral Sciences.

AS.180.266. Financial Markets and Institutions. 3.0 Credits.
Understanding design and functioning of financial markets and institutions, connecting theoretical foundations and real-world applications and cases. Basic principles of asymmetric information problems, management of risk. Money, bond, and equity markets; investment banking, security brokers, and venture capital firms; structure, competition, and regulation of commercial banks. Importance of electronic technology on financial systems.
Prerequisites: AS.180.101 AND AS.180.102
Instructor(s): J. Wright
Area: Social and Behavioral Sciences.

AS.180.289. Economics Of Health. 3.0 Credits.
Application of economic concepts and analysis to the health services system. Review of empirical studies of demand for health services, behavior of providers, and relationship of health services to population health levels. Discussion of current policy issues relating to financing and resource allocation.
Prerequisites: AS.180.102
Instructor(s): D. Bishai
Area: Social and Behavioral Sciences.

AS.180.303. Topics in International Macroeconomics and Finance. 3.0 Credits.
The course will review selected topics in international macroeconomics and finance. The topics for the Fall of 2015 include: financial globalization; international portfolio diversification; the problems posed by "sudden stops" in capital flows to emerging markets; global imbalances and global demand rebalancing; how different exchange rate regimes have fared in the global financial crisis; sovereign default in the light of the Argentine experience; and the ongoing Russian currency and financial crisis. The course involves mathematical modeling as well as data analysis.
Prerequisites: Pre-reqs: AS.180.101 AND AS.180.102 AND AS.180.302
Instructor(s): O. Jeanne
Area: Social and Behavioral Sciences.

AS.180.351. Labor Economics. 3.0 Credits.
The course discusses various issues in labor markets from the perspective of economic theory. We first study the major forces at work that shape labor market behavior; firms' labor demand and workers' labor supply. Then we discuss the equilibrium behavior of employment and wages. Using these tools, we also cover various applied topics in labor economics, such as minimum wage regulations, male-female wage differentials, human capital investment, worker mobility, and unemployment.
Prerequisites: AS.180.301
Instructor(s): M. Husain
Area: Social and Behavioral Sciences.
AS.180.355. Economics of Poverty/Inequality. 3.0 Credits.
This course focuses on the economics of poverty and inequality. It covers the measurement of poverty and inequality, facts and trends over time, the causes of poverty and inequality with a focus on those related to earnings and the labor market, and public policy toward poverty and inequality, covering both taxation and government expenditure and programs. By the nature of the material, the course is fairly statistical and quantitative. Students should have an intermediate understanding of microeconomic concepts. Basic knowledge of regression analysis is also helpful.
Prerequisites: AS.180.301
Instructor(s): R. Moffitt
Area: Social and Behavioral Sciences.

AS.180.361. Rich Countries, Poor Countries. 3.0 Credits.
Why are some countries rich while some other countries poor? Why does a country's income per person generally grow over time? We try to analyze these questions using the theoretical and empirical growth literature. We will study seminal growth models, and also try to explain cross-country income differences in terms of factors like geography, institutions and global integration. Knowledge of regression analysis (including instrumental variables estimation) is required.
Prerequisites: AS.180.302 AND (AS.180.334 OR AS.180.434)
Instructor(s): S. Dasgupta
Area: Social and Behavioral Sciences.

AS.180.389. Social Policy Implications of Behavioral Economics. 3.0 Credits.
Economists increasingly incorporate insights from psychology into models of rational decision-making. Known as "behavioral economics," this line of research considers how, for example, emotions, rules-of-thumb, biased beliefs and time-inconsistent preferences influence how we make choices. Behavioral economics increasingly pervades policy discussions on topics as diverse as: obesity, the role of media, subprime mortgages and voting patterns. Behavioral models are certainly novel, but do they help us to design superior social policies? With the goal of preparing students to address this question, this course (1) provides a thorough overview of the main contributions of behavioral economics, highlighting departures from more traditional economic models and (2) emphasizes how behavioral economic models might (or might not) improve how we think about social policy.
Prerequisites: AS.180.301 OR AS.180.401; AS.180.334 OR AS.180.434 can be taken concurrently.
Instructor(s): N. Papageorge
Area: Social and Behavioral Sciences.

AS.180.390. Health Economics & Developing Countries. 3.0 Credits.
Prerequisites: AS.180.301 OR AS.180.401; Students may not take AS.180.390 if they took AS.180.391.
Instructor(s): M. Gersovitz
Area: Social and Behavioral Sciences
Writing Intensive.

AS.180.391. Economics of China. 3.0 Credits.
Discussion of the economic experience of Post-War China, primarily emphasizing topics rather than historical narative: agriculture, industry including corporate governance and public enterprises, international trade, population, migration, education, health, public finances among other topics.
Prerequisites: AS.180.301 OR AS.180.401; Students may not take AS.180.390 if they took AS.180.391.
Instructor(s): M. Gersovitz
Writing Intensive.

Political Science

AS.190.101. Introduction to American Politics. 3.0 Credits.
This course examines the ideals and operation of the American political system. It seeks to understand how our institutions and politics work, why they work as they do, and what the consequences are for representative government in the United States. Emphasis is placed on the federal government and its electoral, legislative, and executive structures and processes. As useful and appropriate, attention is also given to the federal courts and to the role of the states. The purpose of the course is to understand and confront the character and problems of modern government in the United States in a highly polarized and plebiscitary era.
Instructor(s): R. Lieberman
Area: Social and Behavioral Sciences.

AS.190.102. Introduction To Comparative Politics. 3.0 Credits.
To understand politics, the sound bites of the modern media take us only so far. In this course, we will take a step back and implement an intellectually rigorous method. Scholars of comparative politics use the method of comparison in order to illuminate important political phenomena of our times. Following this method, we will embark on a scholarly tour of the world and compare the politics of various countries. We will also trace these politics back to their historical sources. We will work from the assumption that there is something to be gained from such comparisons across space and time.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.108. Freshmen Seminar: The Human Condition. 3.0 Credits.
This freshman seminar will focus on reading just one book, The Human Condition, by Hannah Arendt. Such a narrow focus is justified by the breadth of topics the book itself discusses and the influence these various discussions have had on modern political thought. Among the various topics that will be studied and talked about are the meaning of the distinctions Arendt makes between "public," "private," and "social," as well as between "labor," "work," and "action." In the course of their studies, students will be challenged to think about the relation of philosophy to politics, the significance of the scientific revolution for public life, the character of contemporary society, and what it means to be "free." Also, by focusing on just one book, students will have the opportunity to learn how to do the kind of close reading and textual analysis success in college requires. In addition to reading assignments, students will be required to write four short papers.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.109. Politics of East Asia. 3.0 Credits.
This course examines some of the central ideas and institutions that have transformed politics in the contemporary world through the lens of East Asia, focusing on Japan, South Korea, Taiwan, and China. We analyze two enduring themes of classical and contemporary scholarship in comparative politics: development and democracy. The purpose is to introduce students to the various schools of thought within comparative politics as well as to the central debates concerning East Asian politics.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences.

AS.190.111. Introduction to Global Studies. 3.0 Credits.
This course surveys scholarly approaches to processes, relations, institutions, and social structures that cross, subvert, or transcend national borders. The course will also introduce students to research tools for global studies. Students who have taken Contemporary International Politics 190.209 or International Politics 190.104 may not register.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences.

AS.190.204. Ancient Political Thought. 3.0 Credits.
The premise of this course is that a political perspective is tied up with a (meta)physical one, that is to say, with ideas about the nature of Nature and of the status of the human and nonhuman elements within it. How is the universe ordered? Who or what is responsible for it? What place do or should humans occupy within it? How ought we to relate to nonhuman beings and forces? We will read three different responses to such questions and show how they are linked to a particular vision of political life. In the first, the world into which human beings are born is ordered by gods whose actions often appear inexplicable: Prometheus Bound by Aeschylus, Oedipus the King by Sophocles, and Hippolytus by Euripides will represent this tragic vision of the cosmos. In the second, Plato, in Republic and in Phaedrus, the forces of reason and eros play central and powerful roles. In the third, Augustine of Hippo presents a world designed by a benevolent, omnipotent God who nevertheless has allowed humans a share in their own fate. We end the course with Nietzsche’s Birth of Tragedy, which offers a perspective on these three visions of the world – the tragic, the rational, and the faithful – which will help us evaluate them in the light of contemporary political and ecological concerns.
Instructor(s): J. Bennett
Area: Humanities, Social and Behavioral Sciences.

AS.190.209. Contemporary International Politics. 3.0 Credits.
An introduction to international politics. Emphasis will be on continuity and change in international politics and the causes of war and peace. The first half of the course will focus on events prior to the end of the Cold War, including the Peloponnesian War, the European balance of power, imperialism, the origins and consequences of WWI and WWII, and the Cold War. The second half of the course will focus on international politics since 1990, including globalization, whether democracies produce peace, the impact of weapons of mass destruction, terrorism, and the prospects for peace in the 21st century. Theories of realism and liberalism will also be considered.
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.217. Introduction to International Relations Theory. 3.0 Credits.
This course is a broad introduction to international relations theory in a format that encompasses lecture and discussion. We will explore mainstream theoretical perspectives and critiques of those perspectives, as well as more recent developments in the field.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences.

AS.190.220. Global Security Politics. 3.0 Credits.
Contemporary and emerging technologies of nuclear (weapons, terrorism, energy) outer space (missiles, missile defense, asteroids), biosecurity (bioweapons, pandemics, terrorism) and cyber (war, spying, surveillance) and implications for security, international politics, arms control, and political freedom.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences.

AS.190.226. Global Governance. 3.0 Credits.
Global problems like poverty, financial instability, human rights abuses, and climate change threaten both international order and human well-being. In the absence of a world state, these problems must be addressed by an increasingly complex, transnational network of organizations and social groups. First, we will aim to understand and explain how global problems are governed through detailed case studies of International Organizations and Non-Governmental Organizations such as the United Nations, World Bank, Intergovernmental Panel on Climate Change, Amnesty International and more. Second, we will critically evaluate the successes and failures of these organizations and explore the possibilities for improving democratic governance at the global level.
Instructor(s): B. Allan
Area: Social and Behavioral Sciences.

AS.190.227. U.S. Foreign Policy. 3.0 Credits.
This course will provide and analysis of US foreign policy with a focus on the interests, institutions, and ideas underpinning its development. While the course will offer a broader survey, the emphasis will be on important developments during the Cold War, such as the articulation of containment strategies and nuclear deterrence, and the analysis of contemporary foreign policy questions, including the problems of terrorism and failed states. In addition to security issues, attention will also be paid to significant developments in international trade policy.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences.

AS.190.265. Comparative Political Behavior. 3.0 Credits.
An introduction to the study of political behavior, emphasizing electoral behavior in democratic countries.
Instructor(s): R. Katz
Area: Social and Behavioral Sciences.

AS.190.280. Political Persuasion. 3.0 Credits.
An introduction to Euro-American political thought, with a focus on the role of language, rhetoric, and Eros within politics. Texts by Plato, Machiavelli, Hobbes, Walt Whitman, and Emma Goldman.
Instructor(s): J. Bennett
Area: Social and Behavioral Sciences.

AS.190.281. Virtue, Labor, and Power (Classics of Political Thought II). 3.0 Credits.
This is not a class in the history of political thought. Instead, it is an opportunity for a selective, circumscribed, but very focused engagement with some of the most powerful and provocative texts in that history. We will read selections from six thinkers (Socrates, Machiavelli, Locke, Marx, Nietzsche, and Foucault), focusing on three themes (Virtue, Labor, and Power). These texts have all profoundly shaped the way we think about politics, and they are texts that resonate with our own political problematics today.
Instructor(s): S. Chambers
Area: Social and Behavioral Sciences.
AS.190.282. Authority and Liberty. 3.0 Credits.
Beginning with Plato, and using Nietzsche's history of metaphysics as a guide, this course serves as an introduction to Euro-American political thought by analyzing the philosophical foundations of political authority. In addition to works by Plato and Nietzsche, readings will include works by Kant, Mill, Hart, and Foucault.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.283. The Politics of Memory (Classics of Political Thought IV). 3.0 Credits.
Was George Orwell right that those who control the past control the future—and those who control the present control the past? This is a course on the politics of memory: how political power shapes what is available to be remembered, the timing, spaces, and occasions of commemoration, and who is permitted to invoke (or disavow) the past. We will engage a range of highly contested works of ancient, modern and contemporary political theory to investigate how the past might haunt present day politics through memories that are conscious and unconscious. The themes we will take up include: the correspondence between memory and freedom; whether we ever be free given that we are creatures endowed with memory, whether it is sometimes politically necessary (or even possible) for people to forget, and what politics of memory emboldens, or threatens, democracy. There are no prerequisites for this course.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.284. Classics of Political Theory: Political Freedom. 3.0 Credits.
This course investigates core questions of what constitutes political freedom, what limits on freedom (if any) should be imposed by authority, and the relationship between freedom, responsibility and political judgment. Spanning texts ancient, modern and contemporary, we shall investigate how power inhabits and invigorates practices of freedom and consent. Among the questions we will consider: Can we always tell the difference between consent and coercion? Are morality and freedom incompatible? Is freedom from the past possible? By wrestling with slavery (freedom’s opposite) we will confront the terrifying possibility that slavery can be both embodied and psychic. If our minds can be held captive by power, can we ever be certain that we are truly free?
The political stakes of these problems will be brought to light through a consideration of issues of religion, gender, sexuality, civility, libelous, class and race.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences

AS.190.291. Global Political Economy. 3.0 Credits.
Examines the intersection of politics and economics in global affairs. Focuses on theoretical approaches to global political economy; institutions of governance of the global political economy; flows of goods, services, capital, and information; and transborder problems.
Recommended Course Background: AS.190.209
Prerequisites: Not open if you have previously taken AS.190.216.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.301. Disposable People: Race, Immigration and Biopolitics. 3.0 Credits.
This course will explore theories and practices of race and immigration in order to illuminate the proliferation of populations regarded as disposable in contemporary politics. We will pay special attention to the contestable criteria used to determine eligibility for membership in the human race. We shall also examine how political power influences the relays between citizenship status and those whose lives are worthy of protection, and those who should be allowed to die.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences.

AS.190.308. Democracy and Dictatorship: Theory and Cases. 3.0 Credits.
The course will cover three topics: 1) The conceptualization of political regime, democracy and authoritarianism. We will also consider neighboring concepts of other macro-political structures—government, state, and administration—in order to be able to demarcate what is distinctive about the study of political regimes. 2) The characterization of political regimes in most Western and some non-Western countries, in history and today. We will centrally focus on the so called “Waves of Democratization,” but we will also consider stories with less happy outcomes, that is, processes that led to the breakdown of democracies and the installation of repressive dictatorships. 3) The explanation(s) of the stability and change of political regimes around the world.
Theoretical accounts of regime change come in many flavors—emphasis on economic versus political causes, focus on agents and choices versus structures and constraints, international versus domestic factors, among others. We will consider most of them.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences.

AS.190.314. Struggles for Democracy: from the French Revolution to the Arab Spring. 3.0 Credits.
This course is a systematic introduction to theories of regime change, which includes episodes of democratic transitions (gradual or revolutionary) and breakdowns, as well as trajectories of regime stability, like the persistence of various types of authoritarian rule and democratic politics. Two thirds of the course will cover theories, which in comparative politics are mostly inductive constructions from historical experiences. The remaining third will be case studies of exemplary events and processes, for instance, the differentiation of political regimes in post-WWII Europe in terms of liberal, fascist, and social-democratic regimes; the convergence towards democracy in Western Europe and Latin America between 1950 and 1990, and the fragility of democracy in Tropical Africa and the Middle East.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences.

AS.190.320. Politics Of East Asia. 3.0 Credits.
Examines some of the central ideas and institutions that have transformed politics in the contemporary world through the lens of East Asia, focusing on Japan, South Korea, Taiwan, and China. Topics include state-society relations, late development, nationalism, democratization, political culture, social movements, and globalization.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences.

AS.190.325. Finding Equality in Law and Society. 3.0 Credits.
In this class, we will ask questions about the relationship between equality, law, and society. We will investigate how people have used law in their movements for greater equality, and ask whether law has served these movements well and how it has worked. We will pay particular attention to movements based on race, gender, and economic class.
Instructor(s): E. Zackin.
AS.190.326. Democracy And Elections. 3.0 Credits.
An examination of most aspects of democratic elections with the exception of the behavior of voters. Topics include the impact of various electoral systems and administrative reforms on the outcome of elections, standards for evaluations of electoral systems, and the impact of the Arrow problem on normative theories of democratic elections. Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences.

AS.190.327. Politics of Information. 3.0 Credits.
Considers global and comparative politics of information, information technologies, and the Internet. Examines governance of information (ownership of information, rights to information, privacy) and governance of information technologies (domain names, social media websites, etc.). Students who previously took AS.190.327 Politics of Information may not take this course.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences.

AS.190.329. National Security-Nuclear Age. 3.0 Credits.
This course examines the impact of weapons of mass destruction on international politics with an emphasis on security issues. The first half of the course focuses on the history of nuclear weapons development during the Cold War and theories of deterrence. The second half of the course considers contemporary issues including terrorism, chemical and biological weapons, ballistic missile defense and proliferation. Requirements include a midterm, final and a ten page paper.
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.330. Japanese Politics. 3.0 Credits.
This course introduces students to the major debates and issues of postwar Japanese politics. Topics include nationalism, electoral politics, civil society, and immigration.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.333. American Constitutional Law. 3.0 Credits.
This course covers enduring debates about the way the Constitution has structured the U.S. government and about which powers the Constitution assigns to the federal government and to the states. We will examine these debates in the context of American political history and thought by studying the writings of prominent participants, and landmark Supreme Court cases.
Instructor(s): D. Dagan de Picciotto; E. Zackin
Area: Social and Behavioral Sciences.

AS.190.334. Constitutional Law. 3.0 Credits.
The second semester of a two semester course. Topics include executive and emergency power, racial and gender equality, and selected free speech and religious freedom issues.
Prerequisites: AS.190.333
Instructor(s): E. Zackin
Area: Social and Behavioral Sciences.

AS.190.335. Imagining Borders. 3.0 Credits.
What is a border and why do borders matter in global politics? What do borders mean under conditions of globalization? An examination of the politics of borders, transborder flows, and networks within and across borders. The readings which come from political science and other disciplines, will include theoretical and case-specific works.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences.

AS.190.339. American Racial Politics. 3.0 Credits.
Recommended Course Background: AS.190.214
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.340. Black Politics I. 3.0 Credits.
This course is a survey of the bases and substance of politics among black Americans and the relation of black politics to the American political system up to the end of Jim Crow. The intention is both to provide a general sense of pertinent issues and relations over this period as a way of helping to make sense of the present and to develop criteria for evaluating political scientists' and others' claims regarding the status and characteristics of black American political activity.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.341. Korean Politics. 3.0 Credits.
This course introduces students to the historical and institutional foundations of modern South Korean politics. Topics include nationalism, political economic development, civil society, globalization, and ROK-DPRK relations. (CP)
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.342. Black Politics II. 3.0 Credits.
Recommended Course Background: AS.190.340.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.343. Research Seminar on Political Parties. 3.0 Credits.
This seminar has two basic objectives: both theoretical and empirical study of selected topics in the comparative literature on political parties, and the ultimate production of a publishable-quality (or conference-presentable-quality) paper. Topics will include (but not be limited to) the place of parties in political theory and the nature of party systems, party organization, and party behavior in the United States and other countries.
Instructor(s): R. Katz
Writing Intensive.

AS.190.344. Seminar In Anti-Semitism. 3.0 Credits.
Jews exercise a good deal of power in contemporary America. They are prominent in a number of key industries, play important roles in the political process, and hold many major national offices. For example, though Jews constitute barely two percent of America’s citizens, about one-third of the nation’s wealthiest 400 individuals are Jewish and more than ten percent of the seats in the U.S. Congress are held by Jews. One recent book declared that, “From the Vatican to the Kremlin, from the White House to Capitol Hill, the world’s movers and shakers view American Jewry as a force to be reckoned with.” Of course, Jews have risen to power in many times and places ranging from the medieval Muslim world and early modern Spain through Germany and the Soviet Union in the 20th century. In nearly every prior instance, though, Jewish power proved to be evanescent. No sooner had the Jews become “a force to be reckoned with” than they found themselves banished to the political margins, forced into exile or worse. Though it may rise to a great height, the power of the Jews seems ultimately to rest on a rather insecure foundation. Cross-listed with Jewish Studies. Course is open to juniors and seniors.
Instructor(s): B. Ginsberg
Area: Social and Behavioral Sciences

AS.190.352. The Politics of Global Development. 3.0 Credits.
Development is often assumed to be an economic issue. In this course we examine the politics of development on a global scale. We begin by looking at the colonial and Cold War histories of development. We then use these histories to contextualize contemporary development issues that directly affect international relations such as aid and debt, humanitarianism, food security, land “grabs”, migration and indigenous rights. The course also seeks to understand the ways in which the issues underlying global development have always connected and continue to connect the peoples and polities of the Global North and Global South. Instructor(s): R. Shilliam.

AS.190.368. Pluralism. 3.0 Credits.
This seminar will explore the theory and politics of pluralism: from European debates over religious tolerance to American debates over constitutional founding, from liberal political philosophy to radical democracy. Authors may include Bentley, Dahl, Locke, Madison, Ranciere, Rawls, Young. Recommended Course Background: Previous course in political theory or permission of instructor. Instructor(s): S. Chambers Area: Social and Behavioral Sciences.

AS.190.373. The Politics of Public Policy. 3.0 Credits.
This course is an introduction to the political structure and process of making public policy in the United States. Public policymaking is, above all, an arena in which policy professionals try to bring systematic evidence and scientific knowledge to bear to diagnose, understand, and solve social problems. At the same time, policymaking also takes place in a political environment, in which strategic and purposive actors contend for power and seek to advance their own goals and realize their own visions about how the world ought to be changed for the better. The goals that participants in the policymaking process pursue may take a variety of forms: substantive policy outcomes, of course, but also power, political advancement, or material advantage. The actors who populate the process, moreover, may disagree about the goals they seek and making policy — especially in democratic political systems — requires some means of resolving these disagreements. Actors also differ in the resources they have at their disposal to seek their goals — power, money, organization, for example, but also knowledge and expertise. Finally, policymakers cannot do anything they want in pursuit of their goals. They are constrained by the rules and structures that make up the policymaking system. These factors — actors, goals, resources, knowledge, and rules — shape the politics of policymaking and frame the strategic options available to policymakers. Instructor(s): B. Mikulski, R. Lieberman.

AS.190.379. Nationalism and the Politics of Identity. 3.0 Credits.
Nationalism ties powerful organizations to political mobilization, territory, and individual loyalty. Yet nationalism is typically studied in isolation from other social formations that depend upon organizational — individual linkages. Alternative types of identity category sometimes depend similarly upon organizations that collect and deploy resources, mobilize individuals, erect boundaries, and promote strong emotional connections among individuals as well as between individuals and institutions. In this class, we study classic and contemporary works on nationalism, drawn from multiple disciplinary and analytic traditions, in the comparative context of alternative forms of identity. The focus of the class will be primarily theoretical, with no regional or temporal limitations. Instructor(s): M. Kocher.

AS.190.380. The American Welfare State. 3.0 Credits.
This course analyzes the distinctive US welfare state in historical and comparative perspective. We begin with a survey of the policy context, an historical overview from the poorhouses through the Great Society, and a tour of welfare states across the rich democracies. We then survey developments — and explain the actual workings of policy — across jobs, education, welfare, pensions, and health care. We explore the institutional and political factors behind their divergent trajectories through conservative revival and the age of Obama. Students will write a seminar paper exploring policy development over time in a program or area of their choosing. Enrollment restricted to Social Policy minors only. Prerequisites: Students may take AS.190.380 or AS.360.380, but not both. Instructor(s): D. Schlozman Area: Social and Behavioral Sciences Writing Intensive.

AS.190.381. Global Environmental Politics. 3.0 Credits.
Instructor(s): B. Allan Area: Social and Behavioral Sciences Writing Intensive.

AS.190.382. Democracy and Development: Theory and Cases. 3.0 Credits.
Most wealthy countries are democracies. But not all democracies are wealthy—India, Costa Rica, and Mongolia are prominent examples of poor countries with democratic regimes. The course will examine the relation between economic development and political democratization under three big questions. (a) Under what conditions, and through which mechanisms, does economic development promote democracy? (b) If economic development is not possible in the foreseeable future, how do countries achieve stable democratization? (c) Under what conditions, and through which mechanisms, does democracy foster economic development? Instructor(s): S. Mazzuca Area: Social and Behavioral Sciences Writing Intensive.

AS.190.385. Urban Politics and Policy. 3.0 Credits.
An analysis of public policy and policy-making for American Cities. Special attention will be given to the subject of urban crime and law enforcement, poverty and welfare, and intergovernmental relations. Cross listed with Africana Studies. Instructor(s): L. Spence Area: Social and Behavioral Sciences.

AS.190.391. Time to Kill: Race, Punishment, Death and Desire. 3.0 Credits.
This course examines the role of race in determining who deserves to be punished, the timing and occasions of punitive action and how long punishment should endure. Key to our inquiry is how racialized presumptions about human desire might justify punitive logics of power. The class explores inequalities in the distribution of punishment and death in order to illuminate how race shapes questions of whose time is more valuable, who lives and who dies, and ultimately whose lives count as human. Instructor(s): P. Brendese Area: Social and Behavioral Sciences.
AS.190.393. Theories of Constitutional Interpretation. 3.0 Credits.
In this course, we will read and discuss a variety of arguments about how best to interpret constitutional texts, with particular attention to debates about the U.S. Constitution. The course will also cover debates about the role of ordinary people, legislatures, and judges in determining the content of constitutional law.
Instructor(s): E. Zackin
Area: Social and Behavioral Sciences.

AS.190.394. Comparative Politics of the Middle East and North Africa. 3.0 Credits.
This course examines the domestic, regional, and transnational politics of the Middle East and North Africa. The class is organized into three units. The first examines major armed conflicts—anti-colonial, intra-state, and inter-state—from 1948 through the 1990s. It uses these historical moments as windows onto key issues in Middle Eastern and North African political issues such as external intervention/occupation, human rights, sectarianism, social movements, and memory politics. Unit Two focuses on policy relevant issues such as democratization, minority populations, religion and politics, and gender. In Unit Three, students will explore the politics of the Arab Uprisings through critical reading and discussion of new (post-2011) scholarship on MENA states, organizations, and populations. Enrollment limited to Political Science and International Studies majors.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences.

AS.190.396. Capitalism and Ecology. 3.0 Credits.
Capitalism and Ecology focuses on the relations between capitalism and climate during the era of the Anthropocene. How do capitalist processes of fossil extraction, consumption, production and governance contribute to the pace of climate warming, glacier flows, the ocean conveyor system, species loss and other phenomena? What are the effects and the possible modes of political response? How do the nonhuman, self-organizing processes such as glaciers, oceans and climate change on their own as they also amplify the effects of capitalist emissions? The course combines texts on capitalism and activism with those by geoscientists on how the nonhuman systems work. Books by authors in the fields of political theory, geology, anthropology, economics, philosophy and ethology will be drawn upon. Authors such as Michael Benton, Brian Fagan, Hayek, Naomi Klein, Fred Hirsch, Fred Pearce, van Dooren and Connolly are apt to be read to engage these issues. A previous course in political theory is recommended. The class is organized around student presentations on assigned readings. Two papers, 10-12 pages in length. Extensive class discussion.
Instructor(s): W. Connolly
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

AS.190.398. Politics Of Good & Evil. 3.0 Credits.
The Politics of Good and Evil places a set of classic myths into conversation with recent philosophical and political work on existential questions. The myths include the Book of Job, Genesis (J version), two dramas by Sophocles, a selection from Augustine, and Voltaire’s Candide. Texts by Nietzsche (Thus Spoke Zarathustra), William James, (A Pluralistic Universe) and Connolly are then placed into conversation with both each other and these classic stories. Kohlberg’s The Sixth Extinction closes the class, encouraging us to think again about the relations between mythic orientations to responsibility, tragic possibility, nature/culture imbrications and the shape of contemporary life during the Anthropocene. Previous work in political theory is recommended. The course is devoted to “elemental theory”, in which diverse existential stories jostle each other and periodically disturb us, challenging us to explore new thoughts in a new world. One class presentation, two 10-12 page papers, and extensive class discussion.
Instructor(s): W. Connolly
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.402. Environmental Racism. 3.0 Credits.
This is an undergraduate political theory seminar that addresses the disproportionate impact of environmental destruction on racially stigmatized populations. We shall examine the logics of power whereby the natural world is subjected to exploitation and domination, in tandem with the subordination of racial subjects historically identified as closer to nature. Likewise, we will explore political and theoretical challenges to environmental racism, such as those posed by indigenous communities, decolonial theory, and political movements contesting the intersection of racial inequalities and ecological crises.
Instructor(s): P. Brendese
Writing Intensive.

AS.190.404. Race and Debt: Living on Borrowed Time. 3.0 Credits.
This is an advanced undergraduate seminar that explores how racial stigma functions as a marker of being always already in debt. In view of the legacies of settler-colonialism, imperialism and chattel slavery, how is it that those from whom so much has been taken are nevertheless regarded as perpetually in debt? We shall examine the moral, economic and racialized logics of power through which a range of political subjects come to be regarded as ungrateful “takers” as opposed to “makers,” and owing a debt to society. In so doing, we will investigate how temporality functions as a tool of power by considering how the indebted are made vulnerable to precarity, discipline, and disposability—in effect, forced to live life on borrowed time.
Instructor(s): P. Brendese
Writing Intensive.

AS.190.407. Geopolitics, Nuclear Weapons and World Order. 3.0 Credits.
Intensive examination of unresolved debates about the implications of nuclear weapons for world order, focusing on deterrence, strategy, arms control, multipolarity, proliferation, terrorism, and abolition, as well as roles of liberal, democratic, and constitutional political forms and popular public involvement. Readings from classic and contemporary sources.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences.
AS.190.408. Sovereignty: Historical Perspectives and Contemporary Issues. 3.0 Credits.
This seminar provides an in-depth exploration of the concept of sovereignty by examining its historical development and its use in international relations scholarship. Our discussion will also be informed by works in political theory and the international law literature. The course is open to advanced undergraduate students and graduate students.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.412. The Use and Misuse of Force. 3.0 Credits.
An examination of the ways in which violence has been used to secure political ends. Topics include terrorism, assassination, genocide, coups, rebellions and war itself. Students examine what makes types of political violence unique and what unites them. (Formerly AS.190.372)
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.425. The New Deal and American Politics. 3.0 Credits.
This seminar explores how the New Deal, the fundamental moment in the post-Civil War United States, has structured politics and government across a variety of domains ever since. Topics include presidential leadership, executive power, political parties, labor, race, and the welfare state.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences

AS.190.426. Science and Expertise in Global Politics. 3.0 Credits.
An in-depth examination of complex global problems that demand the effective use of scientific and expert knowledge in global governance. We will begin with a theoretical overview covering different perspectives on the role of knowledge and technology in global politics before looking in more detail at case studies drawn from environmental politics, nuclear management, colonial history, international political economy, UN peacekeeping, and more.
Instructor(s): B. Allan
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.429. The Political Bases of the Market Economy. 3.0 Credits.
Although “the market” is conventionally understood as separate from “politics”, the modern market economy did not arise in a political vacuum. In fact, the very separation between the economy and politics is itself the product of a politically potent set of ideas. This course is an upper-division reading seminar on the origins and evolution of the modern market economy. Readings will include Smith, Marx, Weber, Polanyi, Keynes, Hayek, Friedman, Becker, and Foucault. Recommended course background: Introduction to comparative politics OR any college-level course in social or political theory.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.430. Time and Punishment. 3.0 Credits.
“If you can’t do the time, don’t do the crime.” According to ask.com, this common expression was made popular in the 1970s by the theme song for the television show “Beretta.” Aside from amusing us with the irony that the star of “Beretta” was Robert Blake who was later charged with the murder of Bony Lee Bakely, the expression raises a profound issue: What is the relationship between punishment and time? This course will explore that question. Topics to be discussed include different philosophical understandings and experiences of time, views of mortality and fate, theories of punishment, specific punishments in the U.S. (including sentences of juveniles, life, death, and LWOP), as well as punishments that are not specifically meted out but are known to be the consequences of political, social, and economic circumstance. Students will read texts in criminology, political theory, philosophy, and jurisprudence, as well as a selection of Supreme Court cases, novels, and short stories. This writing intensive course is limited to undergraduates who have taken at least one “Classics of Political Thought” course (190.280, 190.281, 190.282, or 190.283).
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences.

AS.190.431. Global Climate Governance. 3.0 Credits.
This course will offer an in-depth study of the history and politics of global climate governance. It will examine the central actors, agreements, and policy proposals that shape climate governance.
Instructor(s): B. Allan
Area: Social and Behavioral Sciences.

AS.190.434. Does Israel Have a Future?. 3.0 Credits.
Israel is one of the only countries whose existence is openly challenged. This class will examine the future of Israel focusing on international and domestic threats to its continued existence as a Jewish democracy. Outside threats to be considered include nuclear attack and the growing international movement to delegitimize Israel. Domestic challenges include demographic changes, the role of religion in governance, and doubts as to whether one can be a Jewish state and still be a democracy. Lessons from the destruction of the ancient Israelite kingdoms and from contemporary state deaths will be included. The course will conclude by considering efforts that Israel can undertake to meet the threats it faces.
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.436. Republican Orders and Sustainability. 3.0 Credits.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences.
AS.190.438. Violence and Politics. 3.0 Credits.
This seminar will address the role of violence—both domestic and international—in political life. Though most claim to abhor violence, since the advent of recorded history, violence and politics have been intimately related. States practice violence against internal and external foes. Political dissidents engage in violence against states. Competing political forces inflict violence upon one another. Writing in 1924, Winston Churchill declared—and not without reason—that, "the story of the human race is war." Indeed, violence and the threat of violence are the most potent forces in political life. It is, to be sure, often averred that problems can never truly be solved by the use of force. Violence, the saying goes, is not the answer. This adage certainly appeals to our moral sensibilities. But whether or not violence is the answer presumably depends upon the question being asked. For better or worse, it is violence that usually provides the most definitive answers to three of the major questions of political life—statehood, territoriality and power. Violent struggle, in the form of war, revolution, civil war, terrorism and the like, more than any other immediate factor, determines what states will exist and their relative power, what territories they will occupy, and which groups will and will not exercise power within them. Course is open to juniors and seniors.
Instructor(s): B. Ginsberg
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.439. Advanced Topics in Global Politics: Learning Through Research. 3.0 Credits.
Join a research team. In this course, students will explore topics in global politics and methods for the conduct of inquiry in the Johns Hopkins tradition of learning through research. Under the guidance of the professor, students will learn about a topic from existing primary and secondary sources, collect new empirical evidence, analyze the evidence, and contribute to research products. Recommended for students planning to write a thesis. Junior or Senior standing in Political Science or International Studies or permission of instructor.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.440. European Politics in Comparative Perspective. 3.0 Credits.
Europe has been in a sense the first testing ground for theories of comparative politics, but many outsiders now see Europe as a pacified and somewhat boring place. This course will question conventional wisdom through an examination of European politics in historical and cross-national perspective. We will apply the comparative method to the study of European politics today, and conversely we will ask what Europe tells us more generally about politics. We will see that Europe is still a locus of intense conflict as well as remarkably diverse experimentation. Topics will include: political, legal, and economic governance; the evolution of democracy and fundamental rights, the welfare state, class stratification, immigration and race, the role of religion; European integration and globalization. Juniors and seniors only.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.441. Comparative European Politics. 3.0 Credits.
In comparison with other regions of the world, Europe can easily appear as a pacified and somewhat boring place. This course will question this stereotype through an examination of European politics in historical and cross-national perspective. From a historical perspective, Europe has been the crucible of modern politics. And to this day, Europe remains a locus of intense conflict as well as remarkably diverse experimentation. We will read seminal scholarly works as well as recent comparative politics literature on European politics. The goal is to understand and discuss central concepts that comparative politics scholars mobilize in the study of European politics across time and space. Topics will include: political, legal, and economic governance; the evolution of democracy, the welfare state, partisan politics, immigration, race, and religion; European integration and globalization.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.442. Civil Society. 3.0 Credits.
This course explores classic and contemporary debates on the concept of civil society and critically examines its analytical value in light of recent developments. Topics include the relationship between civil society, the state, and markets, the role of civil society in development and democratization, social capital, and global civil society. This course is open to graduate students from any discipline. Advanced undergraduate students must obtain permission from the instructor and are expected to keep up with graduate students during class discussions.
Instructor(s): E. Chung
Writing Intensive.

AS.190.443. Politics of Outer Space. 3.0 Credits.
Intensive examination of the political aspects of human activities in outer space, past, present and future, with focus on militarization, earth-remote sensing, surveillance, navigation, resource exploitation, the Outer Space Treaty, and colonization.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.444. Causes of Peace. 3.0 Credits.
Since 1945, the great powers have enjoyed their longest period of peace in history. Interstate conflict between lesser powers is also at an all time low. What accounts for this “long peace?” This course will look at various explanations including the spread of democracy, the proliferation of nuclear weapons, globalization, American hegemony, and fundamental changes in attitudes regarding the use of force. Students will present draft versions of their research papers during the last weeks of the course. Co-listed with AS.190.619
Instructor(s): S. David
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.445. Power and Wealth: Sources, Dynamics and Linkages. 3.0 Credits.
This seminar explores theoretical approaches to the multiple relations between political power and economic power, including pluralism, Marxism, and historical institutionalism. Major empirical transformations will provide the motivation: the rise of modern states, capitalism and social classes in Early Modern Europe, the creation of highly unequal societies in post-colonial Latin America and Africa, the varieties of Welfare State in the golden age of advanced capitalism (1950-75), and the powerful rebirth of inequality in advanced economies for the last 25 years. Theories of sources and interactions of political and economic power will be coupled with accounts of the effects of power and wealth on macroscopic change, especially democratization and economic development. Open to juniors, seniors, and graduate students.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.451. Geopolitics. 3.0 Credits.
Intensive exploration of theories of how geography, ecology, and technology shape political orders. Case studies of ancient, early modern, global, and contemporary topics, including European ascent, industrial revolution, tropics and North South divide, climate change, geo-engineering and global commons (oceans, atmosphere and orbital space
Instructor(s): D. Deudney
Writing Intensive.

AS.190.455. Comparative Racial Politics. 3.0 Credits.
This upper-level seminar surveys the major trends and approaches to the comparative study of race in political science and critically examines the link between race and politics. Topics include race and state formation, citizenship and national membership, immigration, racial regimes, and the political economy of race. Recommended background: Courses in comparative politics, political economy, immigration, and racial politics
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.456. Politics of TransHumanism. 3.0 Credits.
Examination of politics of human biological and cybernetic augmentation, and replacement with focus on stratification, weaponization, collectivization, extinction and irregulation.
Instructor(s): D. Deudney
Writing Intensive.

AS.190.471. The University and Society. 3.0 Credits.
In the 20th century, American universities became the envy of the world, leading in most categories of scholarly productivity and attracting students from every nation. In recent years, though, American higher education has come to face a number of challenges including rapidly rising costs, administrative bloat, corporatization and moocification. We will examine the problems and promises of American higher education, the political struggles within the university and the place of the university in the larger society. Upper classes and Grad Students only.
Instructor(s): B. Ginsberg; R. Kargon
Area: Social and Behavioral Sciences.

AS.190.479. Imag(in)ing Cities. 3.0 Credits.
Cities exert a substantial degree of control over American life. Throughout the 20th and early years of the 21st Century they have been centers of industry, of social change, of political change. And in part because of their status, scholars have begun to theorize about cities. The purpose of this class is to interrogate these theories through a filmic lens. Students will be exposed to readings and then in the second half of the semester, to films about cities that implicitly and explicitly speak to and about these theories. Some coursework in urban studies preferred, though not necessary.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.480. Planetary Interdependence and World Governments. 3.0 Credits.
Intensive exploration of alternative global political architectures for high levels of security, ecological and internet interdependence
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.481. Conservatism and Crime. 3.0 Credits.
This course will examine the evolution of conservative thought on crime and criminal justice from the 1960s to the present. We will focus in particular on how the subject of crime illuminates different strains of conservatism, reveals tensions between its values of liberty, authority and anti-statism, and shows the changing approach that conservative intellectuals have had to race.
Instructor(s): S. Teles
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.491. Game Theory in the Social Sciences. 3.0 Credits.
Strategic thinking is a fundamental component of many political and economic phenomena, from international wars and national elections to wage bargains and monopoly power. Game Theory is a set of ideas and techniques for analyzing strategic interactions and making predictions about its outcomes. This course provides an introduction to Game Theory and its main applications to relevant political and social outcomes. Juniors and Seniors Only.
Prerequisites: AS.110.106 or AS.110.108
Instructor(s): S. Mazzuca
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.190.678. Law and Politics.
As a field, Law and Politics has evolved from the study of constitutional law and judicial politics to the political behavior of judges and their associates to the study of law and society, the operation of law and courts "on the ground" in the international arena as well as in the United States, historical institutionalism, and the carceral state. In this graduate course, we will review some of the classic texts in the field, with a focus on the tension between legal institutions and democratic politics. In particular, we will examine how that tension is manifest in the foundations of the American political system and in critical reflection on contemporary practices of American democracy. Students will turn in response papers every week on the reading. In addition, there will be two 10-20 page papers due during the semester. Graduate Students Only.
Instructor(s): E. Zackin; J. Culbert
Area: Social and Behavioral Sciences.
AS.191.313. Why We Punish. 3.0 Credits.
A multidisciplinary exploration of the justifications and problems associated with punishment broadly defined, including prison sentences, personal acts of revenge, and military reprisals. Course texts will include international court cases, philosophical texts, and classic legal thinkers, in addition to fiction and news articles. Particular attention will be paid to when punishment is (or is not) cruel, deserved, or proportionate; when restraint should be shown; and whether it is desirable to abolish it altogether. Case studies will include the practice of solitary confinement, cycles of retaliatory violence in communal conflicts, the death penalty, and International Criminal Court efforts to punish perpetrators of war crimes and crimes against humanity. Writing intensive.
Instructor(s): J. White
Writing Intensive.

AS.191.315. The Domestic Politics of Israel. 3.0 Credits.
Israel's politics and history are complex, involving multiple military conflicts, domestic struggles and dynamic international relationships. This course will focus on Israel's domestic politics by tracing the story of the development of its party system and the parties that compose it. A parliamentary democracy with a proportional representation electoral system, Israel's party system includes multiple parties who represent the various segments of Israeli society. What are the origins of this party system and the parties that compose it? What changes have they experienced and what are the factors that influence those changes? Who are the important actors and what might be motivating them? These questions and others will serve as our guide on a journey to a better understanding of Israel's domestic politics.
Instructor(s): A. Dolinsky
Writing Intensive.

AS.191.326. International Politics from the Global South. 3.0 Credits.
This course focuses on the interests and preferences of developing countries in international politics. The formal and informal rules of international politics tend to favor the interests and preferences of powerful countries: richer states, with better technologies and superior military capabilities. Sometimes, however, the interests and preferences of great powers do not align with what the rest of the countries want, especially with states in the Global South. We will analyze what developing countries do to restrain the leeway of powerful countries, particularly when their interests and preferences conflict. The course is divided into four main sections: a review of the structure of international politics and the Global South, hierarchies of authority, tools to restrain great powers, and actors that try to constrain the leeway of these countries. Given the nature of the material that will be discussed, a previous course on either Global Security Politics or Contemporary International Politics is recommended.
Instructor(s): J. Rodriguez Aquino.

AS.191.327. By Any Means Necessary? Political Theories of Violence. 3.0 Credits.
Questions of violence are as old as questions of politics itself. Are politics and violence essentially the same or is politics fundamentally non-violent? Is violence the only way to achieve political change? Has the state been a force for eliminating violence and securing freedom or has it only created more conflict? Who gets to define what counts as violent, and for what purposes? This course engages such questions through a theoretical lens, often focusing on political actors and activists responding on the ground to these pertinent questions. It asks students to reconsider what they normally think violence, non-violence, and politics are. We will particularly investigate this angle through the lens of race and colonialism—reading such figures as Michel Foucault, Franz Fanon, Mao Zedong, Gandhi, Martin Luther King Jr., Malcolm X, Angela Davis, and Ida B. Wells—as well as focusing on histories of state formation and state violence.
Instructor(s): Q. Lester
Writing Intensive.

AS.191.335. Arab-Israeli Conflict. 3.0 Credits.
The course will focus on the origin and development of the Arab-Israeli conflict from its beginnings when Palestine was controlled by the Ottoman Empire, through World War I, The British Mandate over Palestine, and the first Arab-Israeli war (1947-1949). It will then examine the period of the Arab-Israeli wars of 1956, 1967, 1973, and 1982, the Palestinian Intifadas (1987-1993 and 2000-2005); and the development of the Arab-Israeli peace process from its beginnings with the Egyptian-Israeli treaty of 1979, the Oslo I and Oslo II agreements of 1993 and 1995, Israel's peace treaty with Jordan of 1994, the Road Map of 2003; and the periodic peace talks between Israel and Syria. The conflict will be analyzed against the background of great power intervention in the Middle East, the rise of political Islam and the dynamics of Intra-Arab politics, and will consider the impact of the Arab Spring.
Instructor(s): R. Freedman
Area: Social and Behavioral Sciences.

AS.191.344. Belonging to Nature in the Anthropocene. 3.0 Credits.
This course explores debates in contemporary environmental political thought concerning humanity’s relationship to nature in the Anthropocene. The Anthropocene refers to the era in which “human” activity becomes a force of “nature”—when the impact of human activity on natural processes manifests itself in the stuff of the Earth. For many of us, these planetary transformations are hardly noticeable in day-to-day life, but they are dramatic: we are living through the Earth’s sixth mass extinction. What is our relationship to these transformations? Do we have the power to stop them, or at least to minimize their harmful effects? Course readings and films introduce multiple visions of the human/nature relationship and examine the responses they recommend to these and other questions. The political stakes of these visions are brought to light as we consider: How do visions of the human/nature relationship shape and texture core political concepts like freedom, agency, responsibility, and progress? What do they suggest about the strategies most likely to motivate action amid the uncertainty of the Anthropocene? How do these visions subtly (and not so subtly) relegate some to the realm of “nature” so that others can be classified as “human”?
Instructor(s): S. Erev
Writing Intensive.
AS.191.345. Russian Foreign Policy. 3.0 Credits.
This course will explore the evolution of Russian Foreign Policy from Czarist times to the present. The main theme will be the question of continuity and change, as the course will seek to determine to what degree current Russian Foreign Policy is rooted in the Czarist (1613-1917) and Soviet (1917-1991) periods, and to what degree it has operated since 1991 on a new basis. The main emphasis of the course will be on Russia's relations with the United States and Europe, China, the Middle East and the countries of the former Soviet Union—especially Ukraine, the Baltic States, Transcaucasia and Central Asia. The course will conclude with an analysis of the Russian reaction to the Arab Spring and its impact both on Russian domestic politics and on Russian foreign policy.
Instructor(s): R. Freedman
Area: Social and Behavioral Sciences.

AS.191.365. U.S Constitutional Law - Civil Liberities. 3.0 Credits.
The course is designed to introduce students to the study of civil liberties as protected by the Constitution of the United States. The emphasis will be upon those rights incorporated into the Bill of Rights and made applicable to the states through the Fourteenth Amendment. Specifically, the course will examine freedom of speech and freedom of the press - as well as freedom of freedom of thought, belief, and association. In addition, the course will address the right to privacy, the rights of those accused of crimes, and the rights and protections secured under the two clauses of the First Amendment relating to religious liberty – the Establishment Clause and the Free Exercise Clause.
Instructor(s): S. Snell
Area: Social and Behavioral Sciences
Writing Intensive.

AS.191.389. The Politics of Race and Ethnicity in the Postcolonial Society. 3.0 Credits.
The postcolonial society offers a unique terrain for the study of comparative racial politics, providing a setting for which racial and ethnic politics often take place between predominately non-white groups. In this course, students will examine contemporary understandings of the concepts of race and ethnicity and how they are deployed politically in the postcolonial society, enabling students to make deeper explications about the relationship between race, ethnicity and national inclusion as global phenomena that are the persistent and widespread legacies of colonialism, nationalism and white supremacy. Specifically, students will become familiar with the processes of colonization and decolonization as well as postcolonial theories of resistance—that structure group politics today, drawing upon theoretical sources from Africa, Asia and the Caribbean. These theoretical and historical tools will be used to study racial and ethnic politics across a range of postcolonial cases, including Indonesia, Mauritius, Fiji, Trinidad, Colombia and Brazil.
Instructor(s): E. Thornton
Writing Intensive.

AS.191.402. Numbers, Pictures, Politics. 3.0 Credits.
Aitchison students only.
Instructor(s): L. Drutman
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

Islamic Studies
AS.194.101. Introduction to Islam. 3.0 Credits.
Study of Islam, its beliefs and practices in their historical development, from the preaching of Muhammad to the end of the Middle Ages, providing a historically-grounded understanding of Islam.
Instructor(s): G. Ferrario
Area: Humanities.

German Romance Languages Literatures
AS.211.202. Freshman Seminar: A Thousand Years of Jewish Culture. 3.0 Credits.
This course will introduce students to the history and culture of Ashkenazi Jews through their vernacular, Yiddish, from the settlement of Jews in German-speaking lands in medieval times to the present day. Particular emphasis will be placed on the responses of Yiddish-speaking Jews to the challenges posed by modernity to a traditional society. In addition to studying a wide range of texts—including fiction, poetry, memoir, song, and film—students will learn how to read the Yiddish alphabet, and will prepare a meal of traditional Ashkenazi dishes. No prior knowledge of Yiddish is necessary for this course.
Instructor(s): B. Lang
Area: Humanities.

AS.211.222. Italian Cinema: The classics, the Forgotten and the Emergent.. 3.0 Credits.
This course traces the history of Italian cinema from the silent era to the new millennium, highlighting its main trends and genres, and reflecting on the major transformations modern and contemporary Italian society experienced over the twentieth and twenty-first centuries. We shall examine iconic films such as Vittorio De Sica’s Bicycle Thieves, Federico Fellini’s La Dolce Vita, Michelangelo Antonioni’s L’Avventura, and Pier Paolo Pasolini’s Mamma Roma, that received international recognition and influenced other national, cinematic productions. We shall also look at the work of less famous, or independent filmmakers who received less critical attention. While this class takes an historical approach, it also includes a theoretical component and introduces students to the specificity of the cinematic language, examining films in relation to the mise-en-scène, frame composition, camera movements, editing, and sound. This class is taught in English.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.265. Panorama of German Thought. 3.0 Credits.
This course will explore the evolution of German literature and philosophical thought, from Kant to today. At each meeting, we will investigate canonical texts of the German intellectual tradition, with an eye to discovering their unity as "German" philosophical and cultural artifacts and icons, as well as with an interest in establishing their well-deserved place in the wider, global discourses of world literature. In this way, we will learn to think critically in and with these important literary and philosophical texts from German-speaking lands as a means of viewing and appreciating the full panorama of German thought. Among authors read and discussed will be Kant, Goethe, Schiller, Hegel, Kleist, Heine, Fontane, Nietzsche, Freud, Kafka, Heidegger, Mann and Bernhard. Readings and discussion will be in English. German is appreciated but not required.
Instructor(s): M. Dornbach
Area: Humanities
Writing Intensive.
AS.211.300. Baptism by Fire. 3.0 Credits.
This course will examine the history of Muslims in Spain who lived under political and cultural pressure— at times even the threat of bodily violence—to convert to Christianity and renounce the Arabic Language during Spain’s so called “Golden Age”. By analyzing key historical and literary texts, “Baptism by Fire” will afford particular attention to the early modern history of baptism and Arabic book burnings, historical and fictional alike, which intricately shaped the politics of language, religion, and identity in Spain. Course readings include period selections written by key religious figures such as Cardinal Francisco Jiménez de Cisneros, prominent historians including Miguel de Luna, and renowned authors like Miguel de Cervantes, among others. Class discussions will furnish students with continual opportunities to refine their interpretative, analytical, and linguistic skills by engaging a variety of discursive genres that provide the tools to challenge traditional visions of Islam’s role in the history of Europe and one of its most powerful early modern kingdoms.
Instructor(s): I. Rogers
Area: Humanities.

AS.211.316. Brazilian Cinema and Topics in Contemporary Brazilian Society. 3.0 Credits.
Course is taught in ENGLISH - This course is an introduction to the academic study of cinema as a communicative art and to Brazilian film. The films selected focuses on films from the late 1950s to the present and highlight import episodes and challenges in the advancement of the Brazilian society as well as its cinematic production with a special view to the film aesthetics through analysis from a number of critical perspectives, including class, race, gender as well as ethnicity, nationalism or national identity, colonialism, social changes, and the politics of representation. In this sense, the films and documentaries that we will be watching and studying encompass the period from the rise of New Cinema (Cinema Novo) up to films exploring the most recent trends, including movies launched up to 2016. Students wishing to do the course work in English, for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. THERE IS NO FINAL EXAM. May not be taken on a Satisfactory / Unsatisfactory basis.
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.

AS.211.328. Berlin Between the Wars: Literature, Art, Music, Film. 3.0 Credits.
Explore the diverse culture of Berlin during the heyday of modernism. During the Weimar Republic, Berlin became a center for theater, visual arts, film, music, and literature that would have an outsize impact on culture throughout the world and the twentieth century. The thinkers, artists, and writers drawn to interwar Berlin produced a body of work that encapsulates many of the issues of the period: the effect of the modern city on society; “the New Woman”; socialist revolutionary politics; the rise of the Nazis; and economic turmoil. While learning about interwar Berlin’s cultural diversity, we will take a special look at works by Jewish writers and artists that engage with the question of ethnic, religious, and national identity in the modern world, specifically in the context of Berlin’s rich Jewish history and the rise of anti-Semitism in the interwar period. All readings will be in translation.
Instructor(s): S. Spinner
Area: Humanities.

AS.211.331. Vagabonds and Ramblers: Space & Place in Women’s Cinema. 3.0 Credits.
In recent times in Italy, a new generation of women filmmakers has found its own space in the traditionally male dominated film industry. This “counter cinema” abounds with female city walkers, migrants, vagabonds and other types of urban nomads, whose movement through space signifies a quest for freedom, gestures of protest and rebellion, and a search for place. We start by looking at the work of a pioneer filmmakers such as Elvira Notari, the first woman director in Italy, and then discuss the issue of gender and space in contemporary films by directors Francesca Comencini, Alice Rohrwacher, and Eleonora Danco.
To enrich the analysis, we shall also examine films directed by non-Italians who deal with the theme of women's mobility and their centrality/ marginality from different socio-geographic contexts. Other directors included will be Agnès Varda (France), Chantal Akerman (Belgium), Haifa al-Mansour (Saudi Arabia), and Xiaolu Guo (China) Readings will include essays by Laura Mulvey, Ann E. Kaplan, Linda Williams, and Patricia White.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.333. The Holocaust in Film and Literature. 3.0 Credits.
How has the Holocaust been represented in literature and film? Are there special challenges posed by genocide to the traditions of visual and literary representation? Where does the Holocaust fit in to the array of concerns that the visual arts and literature express? And where do art and literature fit in to the commemoration of communal tragedy and the working through of individual trauma entailed by thinking about and representing the Holocaust? These questions will guide our consideration of a range of texts — nonfiction, novels, poetry — in Yiddish, German, English, French and other languages (including works by Primo Levi and Isaac Bashevis Singer), as well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Steven Spielberg). All readings in English.
Prerequisites: Cannot be taken by anyone who previously took AS.213.361
Instructor(s): S. Spinner
Area: Humanities.

AS.211.341. Power and Resistance in French Political Thought. 3.0 Credits.
Even as a strong, divine-right monarchy emerged in France, following the Renaissance wars of religion, rebellious French thinkers never stopped questioning the foundations of power. They focused critically not only on the claims of authority issuing from the top, but also on the submissiveness of the governed and the reach of propaganda. This course examines how power shapes minds and bodies, from absolutism to the Revolution, to democratic laïcité. Readings include works by La Boétie, Montaigne, Loysseau, Bayle, Rousseau, Saint-Just, Maistre, Foucault, Lefort, Rancière and the Assemblée Nationale.
Readings and discussion in English.
Instructor(s): E. Russo
Area: Humanities.

AS.211.349. JHU Bologna Program: Food for Thought: Gastronomy, Politics & Identity. 3.0 Credits.
Italian Culture course offered on the JHU Summer Program in Bologna. Permission required. Must be taken for a letter grade. Open to students admitted to the JHU Summer Program in Bologna only.
Instructor(s): L. Di Bianco
Area: Humanities.
AS.211.361. Narratives of Dissent in Israeli Society and Culture. 3.0 Credits.
In this course we will study and analyze the notion of dissent in Israeli society and culture on its various literary and artistic forms. We will examine the emergence and the formation of various political and social protest movements, such as the Israeli Black Panthers, Israeli feminism and the 2011 Social Justice protest. We will discuss at length the history and the nature of dissent in the military and in relation to Israeli wars and will track changes in these relations. Significant portion of the course will be dedicated to the literary, cinematic and artistic aspects of Israeli dissent and their influence on Israeli discourse. We will explore the nature and role of specific genres and media such as the Israeli satire, Israeli television, newspaper op-ed and the recent emergence of social media. Students wishing to work in English exclusively for 3 credits should enroll in section one. Students who are fluent in Hebrew and are wishing to attend an additional hour-long Hebrew discussion session per week with Professor Cohen (time TBD in consultation with enrolled students) for 4 credits should enroll in section two.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.

AS.211.380. Modern Latin American Culture. 3.0 Credits.
Taught in Spanish. This course will explore the fundamental aspects of Latin-American culture from the formation of independent states through the present—in light of the social, political, and economic histories of the region. The course will offer a general survey of history of Latin-America, and will discuss texts, movies, songs, pictures, and paintings, in relation to their social, political, and cultural contexts. May not be taken satisfactory/unsatisfactory.
Prerequisites: AS.210.312
Area: Humanities.

AS.211.394. Brazilian Culture & Civilization. 3.0 Credits.
The course is taught in Portuguese. No knowledge of Portuguese is required. This course is intended as an introduction to the culture and civilization of Brazil. It is designed to provide students with basic information about Brazilian history, art, literature, popular culture, theater, cinema, and music. The course will focus on how indigenous Asian, African, and European cultural influences have interacted to create the new and unique civilization that is Brazil today. The course is taught in English, but ONE extra credit will be given to students who wish to do the course work in Portuguese. Those wishing to do the course work in English for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. The sections will be taught simultaneously. Section 01: 3 credits Section 02: 4 credits (instructor's permission required)
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.

AS.211.401. La France Contemporaine. 3.0 Credits.
Students will explore contemporary French society and culture through a wide variety of media: fiction and non-fiction readings (graphic novels, news periodicals, popular magazines), films, music, art, websites, and podcasts. A diverse range of hands-on activities in addition to guided readings will help students develop cultural awareness as we discuss topics such as education, politics, humor, sports, cuisine, immigration, slang, and national identity, as well as the historical factors that have influenced these facets of French and francophone culture. Recommended Course Background: AS.210.301 or AS.210.302 or permission of instructor.
Instructor(s): A. Wuensch
Area: Humanities.

AS.212.341. Power and Resistance: Approaches to French Political Thought.. 3.0 Credits.
Even as a coherent, rational conception of state power emerged in France in as early as the Renaissance, French thinkers never stopped challenging the ways by which power justified itself in order to foster obedience and consensus. In so doing, they focused critically as much on the claims of sovereignty issuing from the top as on the willingness of the governed to submit to them. The course will examine the dialectic between the legitimation and delegitimation of power, from the Renaissance wars of religion to the Revolution and beyond: the haunting fear of the corruption and death of the political body; the notion of permanent crisis; the right to revoke the social contract; the reach of power in shaping minds and bodies. Readings may include works by La Boétie, Bodin, Bayle, Rousseau, Sade, Saint-Just, Constant, Maistre, Tocqueville, Foucault, Lefort and Rancière. Readings and discussion in English.
Instructor(s): E. Russo; W. Anderson
Area: Humanities.

AS.212.353. La France Contemporaine. 3.0 Credits.
Students will explore contemporary French society and culture through a wide variety of media: fiction and non-fiction readings (graphic novels, news periodicals, popular magazines), films, music, art, websites, and podcasts. A diverse range of hands-on activities in addition to guided readings will help students develop cultural awareness as we discuss topics such as education, politics, humor, sports, cuisine, immigration, slang, and national identity, as well as the historical factors that have influenced these facets of French and francophone culture. Recommended Course Background: AS.210.301 or AS.210.302 or permission of instructor.
Prerequisites: Students may not have taken AS.211.401.
Instructor(s): A. Wuensch
Area: Humanities.

AS.212.431. Style, Gender and Politics from Marie-Antoinette to the Burqini. 3.0 Credits.
From effeminate kings, to slutty queens, to post-revolutionary dandies, to the manifest invisibility adopted by some French citizens today, debates on the gendering and styling of political bodies have always been central to power struggles in France. Students will read from sociology, history and literature in order to understand the complex interplay among fashion, gender and political identity. Taught in English, but French minor/major credit possible by completing written work in French and by attending a weekly discussion section conducted in French. Students interested in the 4-credit French option should enroll in section 2. All others should enroll in section 1. Special Notes: This course is meant to be a small class experience. Enrollment limits will be strictly enforced.
Instructor(s): E. Russo
Area: Humanities.
AS.213.104. Freshman Seminar: Weimar on the Pacific: German Exile Culture in the United States. 3.0 Credits.
Freshmen seminar. After Hitler’s seizure of power in 1933, the number of artists and intellectuals who fled the Nazi regime soon rose into the thousands. Many of these German expatriates ultimately settled in the United States (e.g. Los Angeles, New York), where, simultaneously attracted and alienated by their new surroundings, they made a significant impact on American culture. The seminar will explore German Exile Culture in the U.S. in its broad variety spanning a spectrum from film to architecture, literature, and philosophy. Based on the aesthetic and conceptual specificities of the artifacts, class discussions will focus on the relations between art and politics, modernist and mass culture, art and capitalism, culture and democracy. The seminar will close with a look at postwar America and the McCarthy era, when European emigrants became the target of suspicion as left-wing intellectuals.
Instructor(s): A. Krauss
Area: Humanities.

AS.213.265. Panorama of German Thought. 3.0 Credits.
German thought is a broad intellectual tradition that encompasses works in an astonishing number of fields including philosophy, aesthetics, sociology, epistemology, psychology, anthropology, history, religious studies, and cultural analysis. The most prominent representatives of this tradition include Luther, Leibniz, Kant, Humboldt, Hegel, Nietzsche, Marx, Warburg, Freud, Benjamin, Krauss, Weber, Simmel, Cassirer, Auerbach, Adorno, Arendt, Heidegger, and Luhmann. Indeed, current approaches to understanding cultural, historical, and social phenomena as well as literary and artistic forms would not have been possible without the German intellectual tradition which, beginning with the Enlightenment, emphasized the role of the subject in constituting objects of knowledge and experience. This survey course will highlight important topics in German Thought, which may include the subject, consciousness and unconsciousness, Bildung and the idea of the university, the sublime and the uncanny, irony, hermeneutics and translation, the desire for knowledge, tragedy and repetition, civilization, symbolic forms and medial reproduction, memory, and authority in a historical scope. Taught in English.
Instructor(s): R. Tobias
Area: Humanities.

AS.213.270. Die Erfindung der Moderne. 3.0 Credits.
Taught in German. An introduction to key conceptions of modernity elaborated in the German-language cultural context. We consider the rise of historical awareness and the question of whether history has a purpose, modernity’s difference from ancient and medieval times, secularization and the crisis of meaning, the role of intellectual reflection and subjectivity, the relation between cultural production, political power, and economic processes. Excerpts in the original German from works by Kant, Schiller, Novalis, Hegel, Heine, Marx, Nietzsche, Weber, Benjamin, Heidegger
Prerequisites: AS.210.362 or placement exam.
Instructor(s): M. Dornbach
Area: Humanities.

AS.213.305. Contemporary German Film. 3.0 Credits.
After almost a quarter century of neglect, German cinema is on the map again. The many awards German films have been granted over the last 15 years speak to the renaissance of German Cinema since 2000. Among these movies are Florian Henckel von Donnersmarck’s The Lives of Others (Academy Award for Best Foreign Language Film, 2006), Caroline Link’s Nowhere in Africa (Academy Award for Best Foreign Language Film, 2002), Fatih Akin’s Head-On (Golden Bear at the Berlin International Film Festival, 2004; European Film Award 2004), Oliver Hirschbiegel’s Downfall (nominated for Academy Award for Best Foreign Language Film, 2004) or Wolfgang Becker’s Goodbye, Lenin! (European Film Award, 2003). Nazi Germany, the Stasi, or the Reunification are prominent topics of this internationally acclaimed Contemporary German Cinema. Parallel to these mainstream productions, an aesthetically far more adventurous cinema has developed known as “Berlin School” or “Nouvelle Vague Allemande”. Directors associated with the Berlin School are Christian Petzold, Angela Schanelec, Christoph Hochhäusler or Valeska Grisebach.
Dissecting the everyday reality of post-wall Germany, this ‘counter-cinema’ draws on the New German Cinema of the 1970s (among others) to develop radical notions of realism and challenge narrative conventions. This course will give a survey on German Film since 2000 – discussing the historical and cultural context of selected movies as well as analyzing aesthetic strategies and concepts of realism in Contemporary German Cinema. Taught in German.
Instructor(s): E. Strowick
Area: Humanities.

AS.213.322. Museums and Jews, Jews in Museums. 3.0 Credits.
This course will examine the presence of Jews in museums. We will consider the history of the exhibition and collection of Jewish material culture in museums from the 19th century to the present day. Our main task will be to identify the various museological traditions that engage Jewish identity, including the collection of art and antiquities, ethnographic exhibitions, history museums, and Holocaust museums. Some of the questions we will ask include: how do museums shape identity? what is the relationship between the scholarly premises of many museums and their popular reception? and, centrally, what is the relationship between Jewish museums and museums of the Holocaust?
Instructor(s): S. Spinner
Area: Humanities.
AS.213.387. Major City, Minor Literature? Berlin in German-Jewish and Yiddish Literature. 3.0 Credits.

Between the two World Wars, a period of intense artistic and intellectual vitality, Berlin was an international center for theater, visual arts, and literature. Many important Yiddish-language writers were drawn to Berlin and, together with their German-language counterparts, produced a body of literature that explores issues of modernity and identity. By comparing works in Yiddish and German, we will learn about inter-War Berlin's cultural diversity and richness, while also gaining insight into the particular issues of writing about Jewish identity in the 1920s, and the implications of writing in a minor language (Yiddish). We will read works by authors including Joseph Roth and Alfred Döblin in German, and Moyshe Kulbak and Dovid Bergelson in Yiddish. All texts will be in translation. Some questions we will explore include: • What is a minority/ minor language or literature? • How did German and Yiddish interact in cultural and social spheres? • Can texts in different languages comprise a single body of literature? • What did it mean to be German and what did it mean to be Jewish? • Are assimilation and hybridity useful concepts? • Is there such a thing as Jewish modernism? • How did literature of the period respond to the rise of the Nazi party and the intensification of antisemitism?

Instructor(s): S. Spinner
Area: Humanities

AS.213.321. The Prince and the Demagogue: Machiavelli to House of Cards. 3.0 Credits.

Niccòlo Machiavelli’s The Prince is undoubtedly one of the most influential political works in the history of western culture. Read and discussed in many ways, the early-sixteenth-century booklet has been the object of controversial interpretations, which have fueled its myth. Who is Machiavelli’s prince? Is he a tyrant, a good ruler, or a demagogue? How does Machiavelli’s prince move between ethics, politics, and rhetoric? Often evoked in contemporary political discourse and popular culture, Machiavelli’s prince embodies a flexible idea of power that is most difficult to pin down. Moving from a close reading of the text within its original context, this course will consider not only the classical sources that inform The Prince, but also the presence of Machiavelli in today's political culture and fiction. Special attention will be given to the contribution of Italian philosopher Antonio Gramsci, whose interpretation of Machiavelli’s thought is one of gateways to the reception of The Prince in the 20th and 21st centuries. The course is taught in English. Italian Majors and Minors should register for section 02.

Instructor(s): E. Refini
Area: Humanities
Writing Intensive.


Our online shopping habits and political Facebook posts are being monitored by Google's administration as well as by governments across the globe. If we think this is harmless, it is because we assume that the era of the first Apple Watch is different from the era of the first Gutenberg press. But is this really the case? In this course, we will explore this issue by focusing on the emergence of the first institutionalized censorship during a foundational period of modern times - the Renaissance. After addressing the reasons that motivated the creation of the first Index of Prohibited Books (1559), we will closely examine some of the most controversial works by Renaissance authors who were persecuted and banned for their religious, political, or scientific ideas (Erasmus of Rotterdam, Niccolò Machiavelli, Torquato Tasso, Galileo Galilei). The analysis of these texts will allow us to gain an understanding of both the dynamics of censorship and self-censorship in the Renaissance, and the logic behind power's obsession with cultural control - in those times like nowadays.

Instructor(s): A. Zuliani
Area: Humanities
Writing Intensive.

AS.214.362. Italian Journeys: Medieval and Early Modern. 3.0 Credits.

“Italy” is a very old one. Indeed, many “Italies” have existed throughout the centuries, thus contributing - not without conflicts - to one of the richest cultures in the world. By exploring texts and topics from the Middle Ages to modernity, this course will address the cultural history and geography of Italy, focusing on both its centers (Rome, Florence, Venice, etc.) and its peripheries. A veritable journey through Italy, the course will address authors that were fundamental to the development of the Western European tradition (e.g. Dante, Petrarch, Boccaccio, Machiavelli, Ariosto, Tasso). The course will also explore the relationship between these works and other forms of culture, such as painting, music, cinema. The course is taught in English with section 02 available for Italian for Italian Majors and Minors so that the course will count towards their requirements.

Area: Humanities
Writing Intensive.

AS.215.315. Literature of the Great Recession. 3.0 Credits.

The Great Recession—sometimes called the financial crisis or the economic crisis of 2008—brought financial markets to a halt and created significant political turmoil across the North Atlantic. But its impact on culture, and literature especially, has often been ignored. This seminar will travel across Europe, from Dublin to Madrid, from London to Reykjavik in order to examine how literature has registered this most recent economic crisis. We will focus on how crisis is narrated and the ways in which literary works have managed to provide a voice for marginalized social, economic, and political demands.

Instructor(s): B. Seguin
Area: Humanities


The readings bring into consideration the question of terror (of war) and displacement as experienced by migrants in novels by prize winning authors such as Arguedas, Vargas Llosa, Alarcon, Riesco, Roncagliolo and Silva Passuni.

Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.
AS.215.350. Mexico: A cultural history from the Olmecs to the Mexican revolution of 1910. 3.0 Credits.
The offers a survey of Mexican culture from the formative years of the Olmecs (2000 b.c.) to the Mexican revolution of 1910. History of ideas, matrix social formations, art and literature are the focus of this historical overview.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.380. Modern Latin American Culture. 3.0 Credits.
Taught in Spanish. This course will explore the fundamental aspects of Latin America culture from the formation of independent states through the present—in light of the social, political, and economic histories of the region. The course will offer a general survey of history of Latin America, and will discuss texts, movies, songs, pictures, and paintings, in relation to their social, political, and cultural contexts. May not be taken satisfactory/unsatisfactory.
Prerequisites: AS.210.312; Students may earn credit for AS.211.380 or AS.215.380, but not both.
Area: Humanities.

AS.215.404. Cuba Between Heresy and Revolution. 3.0 Credits.
We will examine the Stalinist and Leninist refashioned doctrines of Fidel Castro and Ernesto Che Guevara; Cuba’s Devil’s Pact with Obama; the decline to near breakdown of Cuba-Venezuela Alba dual nation Chavismo; and the startling implications that all of it poses to the rise of sham populism in America. We will press hard into the fabric of Cuba’s battered daily lives, mostly in greater Havana, but also in Miami. Among others, the work of filmmaker Fernando Pérez, the fiction of Leonardo Padura, and Mariel exodus artists will inform our discussions. Our shared hypothesis: that post-revolutionary national sovereignty, coupled with Cuban exile irredentism, may have engendered the island’s dual nation status, tied to Miami’s so-called Cuban enclave. As a result, a theologico-political conflation of Cuba and America’s biblical parables of redemption may engender the island’s dual nation status, tied to Miami’s so-called Cuban enclave. As a result, a theologico-political crisis continues into infinity in terms of plural and bipolar heresies supported by US electoral mapping and lobbying, and in some minds having Cuba become the Fifty-First US state.
Instructor(s): E. Gonzalez
Area: Humanities.

AS.215.412. Populism. 3.0 Credits.
What do Hugo Chávez, Marine Le Pen, and Donald Trump have in common? According to many from across the political spectrum, they are all populists. But what is populism, exactly, and how can it describe such disparate phenomena as left-wing social movements, xenophobic anti-immigrant policies, and economic redistribution? This advanced seminar will examine the history, culture, and political theory of populism. We will pay special attention to the resurgence of populism after the Great Recession and examine a number of cases from Latin America, Europe, and the United States.
Instructor(s): B. Seguin.

AS.215.646. The Narrative of Conquest in the Andes, 1530 - 1680.
Departing from narratology and the perspective of post-colonial studies, the course will analyze the narrative of conquest as developed by Cieza de Leon, Garcilaso de la Vega, Inca, Guaman Poma, Jose de Acosta and William Prescott.
Instructor(s): S. Castro-Klaren.

AS.216.307. Reflective Mirrors: Israeli and Palestinian Cinema. 3.0 Credits.
Palestinian and Israeli cinemas have emerged side by side, each depicting its Other as a deceiving mirror of its own self. This course will analyze the different images of these Others in both cinemas.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities
Writing Intensive.

AS.216.342. The Holocaust in Israeli Society and Culture. 3.0 Credits.
This course examines the role of the Holocaust in Israeli society and culture. We will study the emergence of the discourse of the Holocaust in Israel and its development throughout the years. Through focusing on literary, artistic and cinematic responses to the Holocaust, we will analyze the impact of its memory on the nation, its politics and its self-perception.
Instructor(s): N. Stahl
Area: Humanities
Writing Intensive.

AS.216.370. Israel Through Prose. 3.0 Credits.
This course examines representations of various aspects of Israeli society and culture in contemporary Israeli prose. The course will follow both a thematic and chronological path in order to study the ways in which Israeli prose reflects political, ideological, social and cultural aspects of contemporary Israel. In this context, we will read works by several major authors such as: Agnon, Shabtai, Kahanah-Carmon, Oz, Kenaz, Yehoshua, Grossman, Castel-Bloom, Matalon, Laor, Kashua and Hoffmann. Students who sign up for section 2 will work an additional hour in Hebrew with Professor Cohen at a time mutually agreed upon by the professor and the students enrolled.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities
Writing Intensive.

AS.216.373. War in Israeli Arts and Culture. 3.0 Credits.
In this course we will study the various representations of what functions as one of Israel’s most unifying and yet dividing forces: war. By analyzing literary and cinematic works as well as visual art and popular culture we will attempt to understand the role of war in shaping Israeli society, culture and politics. Topics such as commemoration and mourning, heroism, dissent and protest, trauma and memory and the changing image of the soldier will stand at the center of the course.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.
Sociology

AS.230.143. Global Migration: Refugees, Economic Migrants, and Borders. 3.0 Credits.
This course introduces students to the different forms, catalysts, and consequences of global migration. Even as the plight of migrants and refugees has elicited the sympathy of millions worldwide, the majority of them still encounter closed borders and draconian immigration regimes on the fringes of more "desirable" destinations in Europe, Australia, and the United States, and many others remain in limbo in their countries of origin or in transit states. Are these border restrictions new? Or are they consistent with states’ long-standing ways of regulating who is and is not worthy of being admitted through their borders? Throughout the course, we will trace the divergent factors that prompt refugees and economic migrants to migrate, juxtaposing these with the responses of states, international treaties, and humanitarian organizations to their movement and arrival in host countries. Using a variety of written and verbal assignments, we will question the fundamental categories of migration: What is an economic migrant? What is a refugee? How are they different or similar? Whose interests do such categories serve, and how have they been used justify governmental practices of inclusion and exclusion over time?
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.147. Introduction to Islam Since 1800. 3.0 Credits.
This course is an introduction to contemporary Islam and Muslim societies from approximately 1800 to the present. Key themes will include the colonial encounter, state formation and revolution, Islamic revival, and globalization. Reflecting Islam’s status as a world religion, the course will touch on developments around the Muslim-majority world and in the West.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences.

AS.230.150. Issues in International Development. 3.0 Credits.
Why do billions of people continue to live in poverty? What obstacles stand in the way of secure and dignified lives for all? Who is most likely to bring about change, what strategies should they follow, and what kinds of institutions should they put in place? This course will introduce the main theoretical perspectives, debates, and themes in the field of international development since the mid-20th century. It has three sections. The first section focuses on debates over the optimal conditions and strategies for generating economic growth and on the relationship between growth, human welfare, and inequality. The second section presents critical assessments of development interventions from various perspectives. The third section considers the role of social movements in shaping development and social change in the 21st century.
Instructor(s): M. Levien
Area: Social and Behavioral Sciences.

AS.230.166. Chinese Migration in Modern World History 1500’s-2000’s. 3.0 Credits.
This interdisciplinary course applies theories of economic sociology to examine the effects of Chinese overseas migration on modern world economy from the sixteenth century to the contemporary era. It examines the contribution of overseas Chinese to the development of capitalism in the following junctures: the East-West economic integration in the pre-modern era, China’s modern transformation after the Opium War (1839-1842), the making of US national economy in the early twentieth century, as well as the postwar economic miracles in the Pacific Rim, among others. Special Note: Fulfills History requirement for GSCD track students.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.175. Chinese Revolutions. 3.0 Credits.
This course introduces the origins, operation and impacts of five major revolutions in modern China between 1850 and 1950. These include the Taiping Rebellion, the republican revolutions, federalist and southern automatic movements, labor strikes as well as peasant rebellions. It draws on the existing historiography that examines China’s transition from an empire to a republic, impacts of western and Japanese influences to China, as well as the continuity and change of Chinese social organizations. Cross list with International Studies and East Asian Studies. Fulfills IS History requirement.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.213. Social Theory. 3.0 Credits.
This course will focus on three classical theorists whose ideas have greatly influenced the ways we study and understand society: Karl Marx, Max Weber, and Emile Durkheim. The course is devoted to understanding how each theorist understood the origin, structure and historical dynamics of modern societies. In addition to comparing their theories, we will apply them to current social issues.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.221. Global Social Change. 3.0 Credits.
This course introduces students to issues of global social change, with a particular focus on the challenges of international development and the contemporary globalization process. Specific themes include world income inequality and global poverty, the rise of supranational organizations (e.g. WTO and EU) and their relations with sovereign states, anti-globalization activism, the rise of China and India in the global economy, and the origins as well as consequences of the current global economic crisis, among others. Lectures will be aided by documentary films and other multi-media materials. Special Note: Fulfills Economics requirement for IS GSCD track students only. Formerly offered as AS 230.353. Students who took AS.230.353 cannot take AS.230.221.
Instructor(s): H. Hung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.222. Land, Labor, Environmental Rights and Struggles in Contemporary Africa. 3.0 Credits.
The course examines the new wave of social protest and popular uprisings in contemporary Africa through the interconnected themes of land, labor and environmental struggles. Attention will be placed on the early 21st century.
Instructor(s): R. Jacobs
Area: Social and Behavioral Sciences.
AS.230.223. Housing and Homelessness in the United States. 3.0 Credits.
This course will examine the role of housing, or the absence thereof, in shaping quality of life. It will explore the consequences of the places in which we live and how we are housed. Consideration will be given to overcrowding, affordability, accessibility, and past and existing housing policies and their influence on society. Special attention will be given to the problem of homelessness.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.228. Colonialism in Asia and Its Contested Legacies. 3.0 Credits.
This course surveys the impacts of colonialism in East and Southeast Asia. Special attention will be paid to the social and economic development in British Singapore and Hong Kong as well as Japanese Korea and Taiwan. Topics include free-trade imperialism, colonial modernity, anticolonial movements, pan-Asianism, and post-war U.S. hegemony.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.244. Race and Ethnicity in American Society. 3.0 Credits.
Race and ethnicity have played a prominent role in American society and continue to do so, as demonstrated by interracial and interethnic gaps in economic and educational achievement, residence, political power, family structure, crime, and health. Using a sociological framework, we will explore the historical significance of race and its development as a social construction, assess the causes and consequences of intergroup inequalities and explore potential solutions.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.245. Men and Women in Society. 3.0 Credits.
This course will explore what it means to be male or female through academic writings, fiction, and film. It will examine how genders are defined by individuals, cultures, and institutions, and how those meanings shape everyday life for men and women. Power, inequality, and intersections with race-ethnicity, class, and sexuality will be a primary focus. Theories of gender addressed will include those related to masculinity, social psychology, feminism, and intersectionality. Though the course will primarily consider the United States, gender in other countries and cultures will also be addressed. Cross-listed with WGS.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences.

AS.230.265. Research Tools for Global Sociology and Development. 3.0 Credits.
This course will introduce students to a range of software programs that are critical for conducting social scientific research in the 21st century. Students will develop competency in the use of computer programs for statistical analysis, database management, the creation of maps and timelines, and the presentation of research reports. The course uses examples from ongoing social science faculty research projects at Johns Hopkins on global inequality and international development. Required for GSCD track students. Course previously titled "Research Tools and Technologies for the Social Sciences"
Instructor(s): M. Kang
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.230.275. Revolution, Reform and Social Inequality in China. 3.0 Credits.
This course explores various aspects of social inequality in China during the Mao Zedong and the post-Mao reform eras. We will examine inequality within villages, the rural/urban divide, urban inequality, education and health policies, and gender and ethnic inequality. Each of these issue areas will be tackled analytically, but the aim is also to understand what it was/is like to live in China during and after the Mao era. Formerly offered as AS.230.321.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.285. Maritime East Asia. 3.0 Credits.
This course examines the transnational connections among merchants and migrants in the waters of East and Southeast Asia from a historical and comparative perspective. We will explore how diplomatic ties, long-distance trade and migration contributed to the making of cosmopolitan cities such as Quanzhou (Zayton), Malacca, Fort Zeelandia (Formosa), Batavia, Manila, Singapore and Hong Kong in the region from the tenth century onwards. The course will close with an examination of how the transnational connections are relevant to understand interstate competition in Asia’s long twentieth century. Key subjects to be introduced include tribute trade system, trading diasporas, Euro-Chinese co-colonialism, pan-Asianism, as well as history and historiography of maritime silk road.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.316. African American Family. 3.0 Credits.
This course is an examination of sociological theories and studies of African-American families and an overview of the major issues confronting African-American family life. The contemporary conditions of black families are explored, as well as the historical events that have influenced the family patterns we currently observe. Special attention will be given to social policies that have evolved as a result of the prominence of any one perspective at a given point in time.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences.

AS.230.324. Gender and International Development. 3.0 Credits.
This course employs a comparative perspective to examine the gendered impact of international development experiences and policies. Students will discuss the historical evolution of how the concept of gender has been constructed, conceptualized, and integrated into international development theory and practice. The course will also examine how greater international development. In particular, we will examine structural theories of poverty reduction, individual theories of power and processes of stratification at the household and family level. Specific issue areas will include the globalization, class and work political participation and social movements. Cross-listed with International Studies (CP, IR). Fulfills Economics requirement for IS GSCD track students only.
Instructor(s): R. Agarwala
Area: Social and Behavioral Sciences.
AS.230.325. Global Social Change and Development Practicum. 3.0 Credits.
This course provides "hands on" research experience in the field of global social change and development. Students will participate in a collaborative research project analyzing the causes and consequences of the recent upsurge of protest around the world in comparison with previous historical waves of social unrest. The course fulfills the "research practicum" requirement for Sociology majors and is required for the GSCD track.
Prerequisites: AS.230.265 or permission of instructor.
Instructor(s): B. Silver; S. Karatasli
Area: Social and Behavioral Sciences

AS.230.332. Race, Racism & Racial Privilege. 3.0 Credits.
This course will examine the concepts of race, racism, racial privilege in contemporary America, and the West in general. Examples from other countries will be integrated as well. Historical contexts such as the colonialism, the Civil War and Reconstruction, the Civil Rights movement, and the post Civil Rights era will help to provide an understanding of the social, political, economic, and cultural forces processes that have constructed and shaped the concepts of race and the racialized subject over time.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.335. Medical Humanitarianism. 3.0 Credits.
Humanitarian organizations play life-preserving roles in global conflicts, and have front-row views of disasters ranging from the 2010 Haiti earthquake to the 2011 Fukushima tsunami in Japan. Yet even while they provide vital assistance to millions of people in crisis, such organizations are beset by important paradoxes that hinder their capacity to create sustainable interventions. They work to fill long-lasting needs, but are prone to moving quickly from one site to the next in search of the latest emergency. They strive to be apolitical, yet are invariably influenced by the geopolitical agendas of global powers. How do such contradictions arise, and what is their impact upon millions of aid recipients around the world? Drawing on case studies from South Sudan to Haiti, this course addresses these contradictions by exploring how and why medical aid organizations attempt, and sometimes fail, to reconcile short-term goals, such as immediate life-saving, with long-term missions, such as public health programs and conflict resolution initiatives.
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.336. Family, Gender and Sexuality in China. 3.0 Credits.
This course examines social changes in China since the beginning of the People's Republic (1949) through the lenses of family, gender and sexuality. The first half of the course focuses on understanding family institutions, women's status, gender relations and sexualities in connection with major historical transitions between 1949 and the present. The second half includes readings and discussions around several thematic topics regarding family, gender and sexuality in contemporary China in the broader context of politics, economy, and social norms.
Instructor(s): Y. Dong
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.343. Political Sociology of Latin America. 3.0 Credits.
This course provides an overview of Latin America through its historical, economic, social, and political dimensions. Emphasis will be given to the analysis of social structures: class, race and ethnicity, and the contemporary social movements. The course begins with an overview of the pre-Columbian civilizations and colonial legacies that gave rise to the multiethnic societies and the ethnic conflicts which characterize contemporary Latin America. Cross-listed with Program in Latin American Studies and International Studies (CP)
Instructor(s): M. von der Heydt-Coca
Area: Social and Behavioral Sciences.

AS.230.346. Economic Sociology of Latin America. 3.0 Credits.
This course will offer an overview of Latin America's economic reality as an intertwined process of economic and political domestic factors within the constraints of the world economy. Latin American development will be analyzed from a historical perspective. The first half of the semester the course will focus on the analysis of the economic developmental patterns starting in the middle of the 19th century to the populist era in the middle of the 20th century. In the second half of the semester, we will analyze in depth the contemporary neoliberal approach to development. Globalization is the force that drives economic, social and political processes in Latin America. The course will include case studies as well the social conflicts generated by the increasing polarization of the society. Students will be exposed to important sociological theories.
Instructor(s): M. von der Heydt-Coca
Area: Social and Behavioral Sciences.

AS.230.351. Capitalism, Development and Resistance in South Korea. 3.0 Credits.
This course examines the trajectory of capitalist development in South Korea (hereafter, Korea) in the twentieth and the early twenty-first centuries. We will examine debates around the political economy of development in Korea as well as class formation and social and labor protest. This course is designed to help students explore the dynamics of capitalist development and workers' movements in Korea as a case of late development in the global South. The course also draws on theoretical perspectives and methodological tools from comparative and world-historical sociology to better understand the Korean case.
Instructor(s): M. Kang
Area: Social and Behavioral Sciences.

AS.230.352. Chinese Diaspora: Networks and Identity. 3.0 Credits.
This course combines lecture and class discussion. It examines the history and historiography of Chinese overseas migration. Major issues include overseas Chinese as "merchants without empire," Chinese exclusion acts in the age of mass migration, the "Chinese question" in postcolonial Southeast Asia, as well as the making and unmaking of Chinese identity in the current wave of globalization.
Prerequisites: Students may not have completed AS.230.217 previously.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.
AS.230.360. Migration & Development. 3.0 Credits.
This course focuses on the relationship between international migration and development. The course first introduces theories of international migration, immigrant integration, and international development. Building on this foundation, we then examine how immigrants interact with their homeland and how sending country governments tap their diaspora to improve development outcomes. Cross-listed with International Studies (CP, IR). Fulfills Economics requirement for IS GSCD track students only.
Instructor(s): L. Hao, R. Agarwala
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.366. Sociology of Dispossession. 3.0 Credits.
The “grabbing” of land and natural resources has, in recent years, generated widespread political conflict across the world and put dispossession on the agenda of academics and policy-makers. Nevertheless, compared to other social relations of power, land dispossession has not been central to scholarly or public understandings of capitalism, the state, development, or politics. In this class, we will collectively explore the nascent field that we might call the sociology of dispossession. We will examine existing theories of dispossession, and proceed to challenge, reconstruct or supplant those theories as we consider a wide range of historical examples of dispossession from the English Enclosures and colonial plunder to contemporary urban redevelopment and rural land grabs. This is a reading- and writing-intensive seminar.
Instructor(s): M. Levien
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.364. Ethnic Violence in Comparative and Global Perspective. 3.0 Credits.
This course provides a framework for understanding and analyzing different forms of ethnic violence including ethnic riots, ethnic wars, and genocides around the world. Beginning with foundational texts on defining ethnic groups, we will examine causes and dynamics of ethnic mobilization and violence from different disciplines and perspectives. Throughout the course, we will explore texts that treat key themes in studies of ethnic violence including globalization, economic development, inequality, dismantling of the developmental state, migration, state formation and failure, conflict resolution, and democratization; focusing on various cases of ethnic violence in different regions including Eastern Europe, Basque Region, Turkey, Sudan, India, Sri Lanka, China, and historical cases like Northern Ireland. Fulfills Non-Western History (NWHIST) requirement for IS GSCD students only.
Instructor(s): S. Kumral
Area: Social and Behavioral Sciences.

AS.230.367. Islamic Finance. 3.0 Credits.
Today, Islamic finance is a global industry comprising nearly $2 trillion in assets, with hubs from Kuala Lumpur to Dubai to London. But half a century ago, nothing called “Islamic finance” existed. So where did Islamic finance come from? Why is it growing so fast? And what does it mean for finance to be Islamic? We discuss the ban on riba in the Quran and hadith, finance in early and medieval Islamic societies, petrodollars and the birth of Islamic banking in the 1970s, the rise of Islamic capital markets since 2000, contemporary shariah-compliant financial structures, and the constitution of piety through financial practice.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences.

AS.230.369. Sociology in Economic Life. 3.0 Credits.
This course discusses how geopolitics, technology as well as social differentiation (such as race, class and gender) shape the structure of economic actions. Special attention will be paid to patterns of state-business relationship, labor processes, migrant economy, globalization and international division of labor.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.370. Housing and Homelessness in the United States. 3.0 Credits.
This course will examine the role of housing, or the absence thereof, in shaping quality of life. It will explore the consequences of the places in which we live and how we are housed. Consideration will be given to overcrowding, affordability, accessibility, and past and existing housing policies and their influence on society. Special attention will be given to the problem of homelessness.
Prerequisites: Students may not have previously taken AS.230.223.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.375. Nations, States, and Boundaries. 3.0 Credits.
This course explores the historical origins and development of the modern global political order based on sovereign nation-states, the crisis of this order through the twentieth century, as well as the unraveling of this order at the turn of the twenty-first century. We will focus on how dominant political organizations in the changing world order (such as states, political parties, and transnational governing bodies) have been shaped by different social forces (such as classes and ethnic groups) and vice versa. Topics covered include rise and fall of modern nationalism, formation of regional and global governing structures, “civilizational” turn of global politics, waves of separatism and redrawing of nation’s boundaries after the Cold War, politics of immigration and citizenship, among others.
Instructor(s): H. Hung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.377. Colonialism and Anti-Colonialism. 3.0 Credits.
This seminar examines the theories and historiography of colonialism and anti-colonial movements. It focuses on the establishment of the colonial division of labor, comparative colonialism, identity formation, and nationalism as well as anti-colonial movement.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.
AS.230.378. Refugees, Human Rights, and Sovereignty. 3.0 Credits.
What is a refugee? Since World War II, states that have pledged to offer protection to refugees have frequently been drawn instead to the dictates of nationalism and communitarianism, which prioritize concern for their own citizens, rather than to the needs of forced migrants. As a result, even those migrants that have been formally recognized as refugees according to the 1951 UN Refugee Convention have not been assured of protection, and other migrants have been even less assured. In this course, we will locate the reasons for this reality in the legal, political, and historical underpinnings of political asylum. What is the difference between an asylum seeker and a refugee? How has the refugee category been redefined and contested by international bodies since 1951? How are the ambiguities of real-life violence and persecution simplified in asylum adjudication interviews that require clear, factual narratives? What kinds of protections are offered to asylum seekers, whether by UN bodies, NGOs, or host governments, and how have such protections varied geographically and historically? Finally, what protections, if any, are afforded to those migrants who are fleeing not persecution but rather "merely" endemic poverty or climate-induced displacement? The course draws on literature from sociology, history, anthropology, and international refugee law in order to understand the capacity (or lack thereof) of human rights discourses and declarations to contravene state sovereignty in the name of protecting the rightless.
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.381. Sociology of the Middle East and North Africa. 3.0 Credits.
This course takes a sociological approach to the contemporary Middle East and North Africa. Topics include urbanization and demographic change; rentier welfare states and the global political economy of oil; women in higher education and the labor force; the 2011 Arab Spring; conflict in Syria, Libya, and Yemen; Amazigh (Berber) identity in northwest Africa; Israel-Palestine; “Dubai, Inc.” and the sociology of migrant labor; neoliberal Islamic politics in Turkey; cinema and everyday life in Iran; conservative monarchy in Morocco and Saudi Arabia; and the role of the United States in the MENA region. Students will give presentations, write memos, and submit two papers. One aim of the course is to turn students into clear, polished academic writers and thinkers.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.382. Revolution, Reform and Resistance: India in World Historical Perspective. 3.0 Credits.
This course examines periods of revolutionary upheavals, reforms, and different forms of resistance in India during the 20th century and analyzes their world-historical implications.
Instructor(s): S. Upadhyay
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.383. Courts, Housing, and the City: A Research Seminar on Social Justice in Baltimore. 3.0 Credits.
This course will join an existing survey of the Housing Court in Baltimore City by the Public Justice Center (PJC) of Maryland to examine the role and process of evictions in the Baltimore civil litigation system. The course will examine the history of housing in Baltimore and the changing role of the courts in housing rights and law from the mid-20th century to the present. Working with the PJC’s Human Right to Housing Project, students will be expected to participate in the survey collection process by attending Rent Court and participating in the data collection process, followed by cleaning and analysis of the data. Counts as American Politics/Sociology of the United States for GSCD Track.
Prerequisites: AS.230.205 AND AS.230.265 or permission of instructor
Instructor(s): D. Pasciuti
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.230.385. Schooling, Racial Inequality and Public Policy in America. 3.0 Credits.
After examining alternative explanations for why individuals obtain different amounts and types of educational training, the course focuses on how an individual's family background and race affect his or her trajectory through the educational system. The course covers the specific challenges that have confronted urban schooling in America since the 1960s, including the classic literature on the effects of school and community resources on student achievement as well as the development and later evaluation of school desegregation policies.
The course also considers case studies of current policy debates in the US, such as housing segregation and school resegregation, voucher programs for school choice, and the motivation for and consequences of the establishment of state-mandated testing requirements. Throughout the course, emphasis is placed upon the alternative modes of inquiry and writing which opposing scholars, policymakers, and journalists use to address these contentious topics.
Instructor(s): S. Morgan
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.393. Global Health and Human Rights. 3.0 Credits.
Is access to healthcare a fundamental human right? If so, then which global actors are obligated to provide healthcare to whom, and for how long? How do meanings of health and illness vary across time and place? And finally, how are human rights principles translated into frontline practice in order to promote well-being? This course takes a critical interdisciplinary approach to these questions through a series of global case studies ranging from humanitarian aid in post-tsunami Sri Lanka to anti-FGM (female genital mutilation) campaigns in Ghana. How do international NGOs, UN bodies, and governments collaborate (or compete) to distribute healthcare in places beset by dire resource shortages? Do human rights principles carry legal weight across borders, and if so, could access to healthcare services and essential medicines be litigated in order to compel governments to provide it? And finally, what cultural assumptions do human rights discourses carry with them, and what happens if rights-based approaches are poorly received by recipient populations? Moving beyond the basic principle of healthcare as a human right, this course aims to bring this idea's history and politics into focus by offering an in-depth exploration of its ethics and implementation.
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.
AS.230.395. Contemporary Social Theory. 3.0 Credits.
This course will examine how major social theorists of the 20th century advanced upon the "classical" social theories of Marx, Weber, and Durkheim. As they grappled with the historical events and social concerns of the 20th century—the Russian revolution and its degeneration into Stalinism, the failure of communist movements in the West, the rise and fall of fascism and Nazism, the consolidation of capitalist democracies and welfare states, the emergence of anti-colonial movements in the "Third World," and the persistence of race, gender and sexuality as forms of domination—social theorists provided novel answers to classical questions of social theory: 1) what is the structure of modern society, how does it change, and how is it reproduced? 2) what is the relation between social structures and ideas, knowledge, and subjectivity? and 3) what are the conditions of possibility for human freedom? Theorists to be covered include Antonio Gramsci, Franz Fanon, W.E.B. DuBois, Georg Lukacs, Talcott Parsons, Herbert Marcuse, Jurgen Habermas, Louis Althusser, Pierre Bourdieu, Michel Foucault, Nancy Fraser, Patricia Hill Collins, Judith Butler, and Henri Lefebvre. In addition to understanding and comparing the theories, we will try to use them to understand contemporary societies.
Instructor(s): M. Levien
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.397. The Political Economy of Drugs and Drug Wars. 3.0 Credits.
In the United States, we spend more than $100 billion annually on illegal drugs—and the government spends more than $50 billion a year to combat their sale and use. These statistics raise important and complicated social questions. This course will examine the production, sale, use, and control of illegal drugs from a historical and sociological perspective. We will have three objectives: to understand the social construction of drug use and illegality in the United States and other rich countries; to uncover the political and economic consequences of drug trafficking in those countries that produce drugs, particularly in Latin America; and to examine the political economy of drug control through the so-called War on Drugs, both domestically and internationally.
Instructor(s): C. Thornton
Area: Social and Behavioral Sciences.

AS.230.415. Social Problems in Contemporary China. 3.0 Credits.
In this course we will examine contemporary Chinese society, looking at economic development, rural transformation, urbanization and migration, labor relations, changes in class structure and family organization, health care, environmental problems, governance, and popular protest. The course is designed for both graduate and undergraduate students. Undergraduates must have already completed a course about China at Hopkins. Cross-listed with East Asian Studies.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.435. The China Boom. 3.0 Credits.
This course addresses the origins, global impacts, and demise of China's economic ascendancy as a world economic and political powerhouse at the turn of the twenty-first century. The course will cover the historical origins of the China boom and impacts of the boom on global political economic order. It will also address the social-political imbalances within China that contribute to the global financial crisis and recent slowdown of the Chinese economy. Particular topics include late imperial and Maoist legacies' relation to contemporary economic growth, stages of China's capitalist development, China's outward investment in the developing world, formation and limits of US-China economic symbiosis, and China's participation in global governance, among others.
Instructor(s): H. Hung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.440. Port Cities and Historical Capitalism in Maritime Asia. 3.0 Credits.
The goal of the seminar is to examine the prospects and limits of understanding the incorporation of Asia in the capitalist world-system from the prism of oceanic connections. The theoretical thrust of this course is to develop but also to adapt Janet Abu-Lughod emphasis on the connections across port cities and littoral in the Afro-Eurasian continents before the long sixteenth century in her Before European Hegemony. But instead of looking at a port city as its adjacent hinterland polity's gateway to global trade in the premodern era, the course examines the multifarious coast-hinterland relationships. The readings are organized by a chronological order, which begins with the historical maritime silk road between the third and thirteenth centuries, and will be followed by Asian port cities in the European age of empire and postwar American-led Cold War Structure, as well as the present-day Chinese New Silk Road Diplomacy. Students are expected to select an issue of regional tensions and to analyze its historical root.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.460. Research Seminar on Stratification in the Modern World Economy: 1600-2014. 3.0 Credits.
This course examines stratification in the modern world economy from the 16th century to today, covering classical and contemporary theoretical perspectives and empirical studies on the hierarchical structure of the capitalist world economy (including Baran- Kuznets, Thomas Piketty, Andre Gunder Frank, Giovanni Arrighi, Christopher Chase-Dunn, P. Korzeniewicz and T. Moran, W. W. Rostow). Students will be expected to recreate and extend these empirical studies and engage in a quantitative discussion of theories of global inequality and development. In doing so, we will discuss how methodological choices, research designs, choice of indicators and inequality measures affect the outcomes and conclusions of this research. Using this theoretical and empirical background, the course will engage key questions on the contemporary and historical conditions of world inequality such as; has world income inequality been increasing or decreasing over time? Do we see stability or change in the hierarchical structure of the capitalist world economy? What are the consequences for contemporary rise of China and recent global financial meltdown for world income inequality? What will stratification in the world economy look like in the 21st century?
Counts as IR/Global Sociology or Economics/Economic Sociology for GSCD Track.
Prerequisites: AS.230.150 AND AS.230.265 or permission of instructor
Instructor(s): D. Pasciuti; S. Karatash
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.
Earth Planetary Sciences

AS.271.360. Climate Change: Science & Policy. 3.0 Credits.
Prereq: 270.103 or permission of instructor. This course will investigate the policy and scientific debate over global warming. It will review the current state of scientific knowledge about climate change, examine the potential impacts and implications of climate change, explore our options for responding to climate change, and discuss the present political debate over global warming.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

AS.271.361. Environmental Ethics. 3.0 Credits.
Environmental Ethics is a philosophical discipline that examines the moral relationship between humans and the natural environment.
For individuals and societies, it can help structure our experience of nature, environmental problems, human-environmental relations, and ecological awareness. Beginning with a comprehensive analysis of their own values, students will explore complex ethical questions, philosophical paradigms and real-life case studies through readings, films and seminar discussions. Traditional ethical theories, including consequentialism, deontology, and virtue ethics will be examined and applied. Environmental moral worldviews, ranging from anthropocentric to ecocentric perspectives, will be critically evaluated. Organized debates will help students strengthen their ability to deconstruct and assess ethical arguments and to communicate viewpoints rooted in ethical principles. Students will apply ethical reasoning skills to an examination of contemporary environmental issues including, among others, biodiversity conservation, environmental justice, climate change, and overpopulation. Students will also develop, defend and apply their own personal environmental ethical framework. A basic understanding of modern environmental history and contemporary environmental issues is required. Prior experience with philosophy and ethics is not required.
Instructor(s): A. Monopolis
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.271.401. Water, Energy, and Food. 3.0 Credits.
The water, energy and food (WEF) nexus is a topic of growing interest in the research and policy communities. This course will survey WEF concepts and principles, introduce tools of analysis, and engage students in case studies of critical WEF issues in the United States and internationally.
Instructor(s): B. Zaitchik.

AS.271.402. Environmental Policymaking and Policy Analysis. 3.0 Credits.
This course provides students with a broad introduction to US environmental policymaking and policy analysis. Included are a historical perspective as well as an analysis of future policymaking strategies. Students examine the political and legal framework, become familiar with precedent-setting statutes such as NEPA, RCRA, and the Clean Air and Clean Water Acts, and study models for environmental policy analysis. Cost benefit studies, the limits of science in policymaking, and the impact of environmental policies on society are important aspects of this course. A comparison of national and international policymaking is designed to provide students with the proper perspective. This course is taught in conjunction with an identical graduate course. All students will be expected to perform at a graduate level.
Instructor(s): J. Maldonado
Area: Social and Behavioral Sciences.

Comparative Thought and Literature

AS.300.311. Introduction to Intellectual History. 3.0 Credits.
This course offers a conceptual and historical introduction to Intellectual History. What makes the "history of ideas" different from the history of other objects? What, if anything, distinguishes the history of ideas from the history of philosophy? What is it exactly that we call "ideas"? In what sense do they have a history? These are examples of the kind of questions addressed in the course.
Instructor(s): H. Sirin; P. Marrati
Area: Humanities.

AS.300.313. Maintaining Social Order: Elements of Conservative Political Philosophy and its Critics. 3.0 Credits.
The seminar will discuss (primarily German) political philosophy of a broadly "conservative" orientation in relation to three key periods of social and political upheaval: the Reformation, the French Revolution, and the crisis of parliamentary democracy in the Weimar Republic. Readings from these periods of European history will be approached under the common heading of "conservatism" for their shared preoccupation with how traditional sources of social unity are to be replaced following times of dramatic change and conflict. We will explore why different political crises have always led philosophers to reiterate the fundamental question of what binds political communities together. This preoccupation distinguishes the philosophical currents of conservative thought surveyed in this course from other, more familiar conservatism with purely reactionary agendas that reassert the superiority of a particular religion, culture, or ethnic group, the rule of elites, or the dismantling of the state in favor of free market forces. Each section on conservative thought will conclude with the most relevant critiques from Leftist political opponents. Readings include Hobbes, Burke, de Maistre, Herder, Hegel, Nietzsche, Schmitt, Kant, Marx, Marcuse.
Instructor(s): S. Carmel
Area: Humanities
Writing Intensive.

East Asian Studies

AS.310.115. Ghost Tales from China and Japan, 14th-19th Centuries. 3.0 Credits.
We cannot express our own experience of death – only imagine life after death. How did people in the past conceptualize the world of the dead? Ghost tales will teach us what we imagine as the experience of dead and life after death. This course aims to introduce students to a variety of ghost stories in Late Imperial China and Tokugawa Japan and connect their literary imagination of the dead to the cultural, socio-historical, and religious context of each society as well as to the broad East Asian tradition of supernatural narratives. While we also touch upon earlier traditions on narrating the dead, most of the stories in class readings are from the Ming (1368-1644) and Qing (1644-1911) dynasties of China, and the Tokugawa period (1600-1868) of Japan. Key issues include family, gender, sexuality, body, medicine and many more. Although we will also take a look at visual and theatrical representations of the dead, we will primarily focus on literary texts about ghostly phenomena. Film screenings required. All readings are in English.
Instructor(s): F. Joo
Area: Humanities.
AS.310.200. Economic Growth and Development in East Asia. 3.0 Credits.
The course offers an overview of the complexities of East Asia's development experience from a variety of perspectives, and it is divided into three parts to allow students to develop expertise in one or more countries and/or policy arenas, while also cultivating a broad grasp of the region and the distinct challenges of "East Asia fast-paced, sustained economic growth". Part I considers the origins of Asian economic development, analyses the common economic variables behind the region's success, looks at the East Asian financial crisis and its lessons and assesses whether or not East Asian countries have learned them. Part II will focus on the development experiences of individual countries, with an emphasis on the ASEAN economies, NICs, Japan and China. Part III considers topics of special interest to Asia, including trends toward greater regional economic cooperation, both in the real and financial/monetary sectors, and issues related to poverty, migration, and inclusiveness.
Instructor(s): G. Dore
Area: Social and Behavioral Sciences.

AS.310.205. Music in East Asia. 3.0 Credits.
This survey course focuses on music in modern East Asia. By exploring historical and ethnographic works by scholars in ethnomusicology, history, and anthropology, this course examines traditional, contemporary, and popular musical and theatrical genres. Through case studies, we will discuss major topics—including nationalism, modernity, ethnicity, gender, colonialism, and globalization—of modern East Asia, ranging from Japan, South Korea, North Korea, China, Taiwan, Hong Kong, to Asian diasporas. This course aims to enhance students' cross-cultural understanding, interdisciplinary approach to performance, and critical thinking on the concepts of "East Asia" and "performance."
Instructor(s): P. Tse
Area: Humanities.

AS.310.206. Film and Performing Arts in China: 1949–present. 3.0 Credits.
This course explores Chinese film, music, and theater in post-1949 China. Through discussing scholarly works in history, theater, ethnomusicology, and film studies, students will be exposed to interdisciplinary approach to engaging with film, traditional theater (xiqu), instrumental music, and popular music in China, Taiwan, Hong Kong, and Chinese diasporas. We will examine issues including nationalism, cultural hegemony, modernity, invented tradition, cultural policy, class, and gender. Supplemented by case studies, this course is organized around two overarching questions: how does film and performing arts inform us about the social history of China? How is expressive culture utilized in political agendas in the modern China?
Instructor(s): P. Tse
Area: Humanities.

AS.310.305. Southeast Asia and US Security Strategy. 3.0 Credits.
This survey course is designed to introduce students to Southeast Asia -- the ten member countries of the Association of Southeast Asian Nations (ASEAN) plus Australia and New Zealand. Southeast Asia is an integral part of the broader region of East Asia and a geographic bridge to the Indian subcontinent (South Asia). Southeast Asia has been one of the great success stories in the saga of modernization and development of post-colonial Afro-Asia over the last six decades. Its resulting economic importance is matched by its strategic significance given the presence of imbedded jihadist networks and the emergence of China as a regional great power and aspirant superpower. Nevertheless, the region has been largely overlooked by senior foreign policy and defense officials in Washington. This course will equip students to fill that void by examining the region from the perspective of national security strategy -- broadly understood in its multiple dimensions. Students will be challenged to formulate some element of a viable U.S. national security strategy for the region.
Instructor(s): M. Ott
Area: Social and Behavioral Sciences.

AS.310.306. Domestic Politics of Contemporary China. 3.0 Credits.
This course introduces students to China's contemporary political history and current political system. It helps students develop a critical understanding of China’s governance institutions and processes, political economy, and state-society relations. The course focuses primarily on China’s domestic politics but also covers China's changing role in Asia and the world.
Instructor(s): Y. Yang
Area: Humanities, Social and Behavioral Sciences Writing Intensive.

AS.310.308. The Frontier in Late Imperial China. 3.0 Credits.
The tremendous expansion of Chinese frontiers during the late imperial period forced the state and those who lived within it to grapple with complex problems of governance, ethnicity, and the geographic extent of "China". Issues and concerns associated with the massive Chinese frontiers have extended into the present; hence, no one can appreciate the current problems plaguing China's northwestern, southwestern, or coastal regions without an understanding of its historical antecedents. This seminar is designed to introduce major scholarly works and theoretical frameworks on the Chinese frontier.
Instructor(s): J. Bandy
Area: Humanities Writing Intensive.

AS.310.310. Shamans, She-Devils, and Pilgrims: Women & Gender in East Asian Religions. 3.0 Credits.
This course examines the complexities of gender and the role that women have played in the religions of China, Korea, and Japan. It explores two main types of content: 1) religious discourse on women and gender through doctrines, scriptures, narratives, myths, and legends; and 2) the practices, beliefs, and lives of real women through historical cases, including those of nuns, laity, sovereigns and family members. Organized in chronological order, the course begins with early sources across East Asia and finishes in contemporary times. Readings and assignments emphasize the analysis of primary sources, complemented by secondary works for historical and cultural context. Students will end the course with a research paper focused on a topic of their choice.
Instructor(s): C. Carter
Area: Humanities Writing Intensive.
We will examine how major political events, players, norms and institutions have shaped US-Asia relations in the modern era.
Instructor(s): W. Konishi
Area: Social and Behavioral Sciences
Writing Intensive.

AS.310.401. Authoritarianism, Democracy, and Economic Development: Korea, Indonesia, and Myanmar. 3.0 Credits.
The East Asia's "miracle growth" has not gone hand in hand with a decisive move toward democracy. This seminar explores the reasons why democratization proceeds slowly in East Asia, and seems to be essentially decoupled from the region's fast-paced economic growth and development, and it is divided into three parts. Part I introduces the specifics of East Asia's economic development strategies as well as key concepts of democracy, authoritarianism and military rule and the tensions between these theories and the East Asian experience. Part II will focus on the development experiences of Korea, Indonesia and Myanmar in light of what discussed in Part I of the seminar. The Part III presents lessons emerging from the comparison of Korea's, Indonesia's and Myanmar's developmental trajectories, and explore the role international organizations (e.g. ADB, EU, IMF, WB etc.) played in those choices.
Instructor(s): G. Dore
Area: Humanities.

AS.310.402. Labor Politics in China. 3.0 Credits.
This course explores the transformation of labor relations in China over the past century. It will cover the origins of the labor movement, the changes brought about by the 1949 Revolution, the industrial battles of the Cultural Revolution, the traumatic restructuring of state-owned enterprises over the past two decades, the rise of private enterprise and export-oriented industry, the conditions faced by migrant workers today, and recent developments in industrial relations and labor conflict. The course is designed for upper division undergraduates and graduate students. Cross-listed with Sociology and International Studies (CP).
Instructor(s): G. He; J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

Program in Latin American Studies
AS.361.130. Introduction to Latin American Studies. 3.0 Credits.
The goal of this course is to provide an overview of Latin America, analyzing political and cultural aspects, chronologically organized. We will begin studying the origins of the multi-ethnic societies, starting with the ancient civilizations and their transformation under colonization. It is important to understand the survival of cultural traits among indigenous peasants today in the countries that were the cradle of ancient civilizations: Mexico, Guatemala and the Andean countries. In the republican era the course will focus on the classical Caribbean dictators in the first half of the 20th century and their reflection in the literature, comparing the historical reality with the magic representation in the work of Garcia Marquez. The course will scrutinize the most important revolutions in the continent: the Mexican, Cuban and Bolivian revolutions and the geopolitics of USA in the Americas. Weekly lectures related to the assigned reading will focus on specific periods, topics and regions. After each lecture, we will review the material, connecting specific details from the readings with the more theoretical aspects provided in my lecture. The course has a website where the PowerPoint presentations will be posted. Students are encouraged to post their questions, comments and suggestions on the web after their readings. Students will be given a study guide for each lecture, which will be the basis for the exams. Our perspective on Latin America will be enhanced by a selection of few films related to the topics.
Instructor(s): E. Cervone
Area: Humanities, Social and Behavioral Sciences.

AS.361.207. Afro-Latin American Biography. 3.0 Credits.
In this course, we will examine biographical accounts of men and women of African descent in Latin America and in the broader Black Atlantic. These individuals include conquistadors and slaves, saints and sinners, revolutionaries and ordinary people. In their life stories, we will not only examine questions of race, gender, and religiosity that were central to the construction of identity in the early modern Atlantic world, but also the nature of the sources that allow us to tell their stories.
Instructor(s): J. Clark
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.361.330. Latin America Otherwise: Voicing Dissent. 3.0 Credits.
This course proposes to look at various Latin American texts through an unconventional lens: that of dissent. Partly inspired by French philosopher Jacques Ranciére (2001), we will take as a premise the idea of dissent not simply as a moment of protest or resistance, nor of the collective plea for rights, but the moment when already given or accepted ways of living and institutional forms are unexpectedly modified by subjects not previously recognized as political. We will draw from diverse materials, ranging from political theory texts, Latin American literature, the literature on development, to the experiences of various social movements in the region. Recommended Course Background: an introductory level course in International Studies, Political Science, Anthropology, or Sociology
Instructor(s): T. Zille
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.361.335. Colombia at War. 3.0 Credits.
The history of Colombia comes down to a tale of armed conflicts, protracted and renewed civil wars, coups, ethnic cleansing riots, narco wars, besides the struggles for independence from Spanish colonial rule and extractive capitalist exploitation. We will study the literary, journalistic, and historical record about warring and uncivil Colombia through fiction from Gabriel García Márquez (The General in his Labyrinth and News of a Kidnapping), Fernando Vallejo (The Virgin of the Assassins), and Juan Gabriel Vázquez (The Sound of Things Falling and The Secret History of Costaguana). We will also delve into the current peace process and disarming of the FARCS and the perils and promises that the absorption of the former combatants and recalcitrant holdovers pose to the skeptical and hopeful citizens and various political factions. Instructor(s): E. González
Area: Humanities.

AS.361.380. Brazil: Cinema, Popular Music, Counterculture and Politics from 1960-1990. 3.0 Credits.
We believe that understanding the second half of the 20th century is crucial to understand the challenges that Brazil faces in the 21st Century. This course investigates the cultural, intellectual, social and political history of Brazil from mid-1950s to the 1990s. We begin with an overview of the legacy of Getúlio Vargas (1930-45) and the construction of Brasília (1961), examining the formation of ideas about Brazilian identity, development and modernization of the country. We then examine the dictatorship (1964-1985), its economic and social project, the place of human rights and its impact on Brazilian society, paying attention to how the people responded to an authoritarian regime through a counter revolutionary movement and through culture (Cinema Novo, MPB/ Brazilian popular music, Tropicália) in a fight for democracy. And, finally, we discuss the current issues that the country has dealt with such as democracy, development, corruption, social mobility, and sporting mega events, for example. The course is taught in English, but ONE extra credit will be given to students who wish to do the course work in Portuguese. Those wishing to do the course work in Portuguese should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. The sections will be taught simultaneously. Section 01: 3 credits Section 02: 4 credits (instructor’s permission required)
Instructor(s): V. Santos
Area: Humanities, Social and Behavioral Sciences.

Center for Africana Studies
AS.362.122. History of Africa (since 1880). 3.0 Credits.
An introduction to the African past since 1880.
Prerequisites: Students are not allow to take both 100.122 and 362.122.
Instructor(s): K. Gallon
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

‘Africa rising’ has become an influential, albeit contested, narrative used by institutions like the International Monetary Fund and World Economic Forum to describe the rapid economic growth in 21st century Africa. This rapid ‘economic growth has been accompanied by another type of ‘Africa Rising’ – a mushrooming of social protest and popular uprisings across the continent. The course will introduce important theoretical perspectives, debates, and examples to equip students to critically examine contemporary social dynamics through the interconnected themes of land, labor and environmental rights and struggles that have gripped the African continent. What has given rise to these awakenings? Who are the actors involved in these actions? What are their demands and strategies? What lessons does it hold for social movement theory and development more broadly? The first section focuses on land reclamation movements, the new wave of ‘land grabs’ and responses from below. The second section presents the role of labour movements and its intersection with popular uprisings. The third section considers responses from communities and movements to the ecological destruction and climate change.
Instructor(s): R. Jacobs
Area: Humanities.

AS.362.207. Race and public policy in comparative perspective. 3.0 Credits.
This course will explore the relationship between racial inequality, racial politics, and policy-making in the western world, particularly as it concerns the fight for equality by people of African descent in the US, Canada, Britain, and France. It will cover historical and contemporary struggles over policy, beginning with the African-American civil rights movement, the ensuing War on Poverty and War on Drugs, and followed by contemporary debates over immigration, racial segregation, poverty and racial economic inequality across the four countries. We will take insights from theory and empirical research to study the role that racial constructs and politics play in policy designs, contests over power and resources, electoral representation, public opinion, social movements, and political change. Through case studies of policies aimed at racial inequality (e.g., affirmative action, police reform, urban revitalization), we will examine why and under what circumstances they arise, what form they take, and in what ways they alleviate or reproduce racial inequality. These questions will be considered in light of the broader impact of neoliberalism on normative ideas about policy, race, and inequality.
Instructor(s): A. Livingstone
Area: Humanities.

AS.362.314. Police and Prisons in Comparative Perspective. 3.0 Credits.
This course will examine policing and prisons in the United States and beyond, with a focus on racial inequality. It will consist of two parts. First, we will explore the contemporary state of prisons and policing in the United States and look at debates around the rise of “mass incarceration” and aggressive forms of policing in the final third of the 20th century. Second, we will explore policing and prison in other parts of the globe in the contemporary moment, highlighting similarities and differences from the U.S. case. What can studying the instruments of social control in other societies reveal about our own? Students will develop an understanding of major trends, keywords, and debates in the literature on policing and prisons, with particular reference to race and racism.
Instructor(s): S. Schrader
Area: Humanities.
AS.362.340. Power and Racism. 3.0 Credits.
This course investigates the impact of white supremacy and anti-black racism, as a global system of power, on the political development of the United States of America.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.

AS.362.344. Education Politics in Urban America. 3.0 Credits.
This seminar analyzes trends, developments, and future challenges related to the politics of urban public schooling with a concentration on community political dynamics and the struggle for equal educational opportunity and quality education. The course emphasizes the impact of socioeconomic class inequality, racial/ethnic conflict, and gender politics on the changing character of public school reform since the 1954 Supreme Court decision of Brown v. Board of Education. Cross-listed with Africana Studies.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.

Study of Women, Gender, Sexuality
AS.363.328. Beyond the Global West: Gender/Sexuality, Post-colonialism & Global Capitalism: Feminist Inquiries from Asian Perspectives. 3.0 Credits.
This course examines gender and sexuality issues in both East and South Asian Societies and situates subject matters in the broader contexts of post-colonialism, state formation, revolution and global capitalism.
Instructor(s): Y. Dong
Area: Humanities
Writing Intensive.

Islamic Studies
https://krieger.jhu.edu/islamic/

The minor in Islamic Studies is open to all undergraduates regardless of major. It provides the intellectual and linguistic training to approach Islam — and the world — in a historically and culturally informed way, challenging stereotypes and misconceptions while exploring the diversity and complexity of the world’s second-largest religion.

Minor Requirements
All courses must be taken for letter grades and receive a grade of C- or higher.

Language requirement
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<tr>
<th>AS.375.115 &amp; AS.375.116 *</th>
<th>First Year Arabic and First Year Arabic II (or other approved language)</th>
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Electives (totaling at least 18 credits)
- Four Islamic studies elective courses at any level
- Two Islamic studies elective courses at the 300-400 level

* Other approved languages include: Bahasa Indonesia, Bahasa Malaysia, Bengali, Hausa, Persian, Punjabi, Turkish, and Urdu.
Additional languages may be approved by the Director of Undergraduate Studies.

Cross Listed Courses

AS.010.110. Art of the Islamic World. 3.0 Credits.
This course is an introduction to the art of the Islamic world, covering a geography that stretches from Spain to India and a chronology that extends from the seventh century into our own time. Within this rich and varied continuum, we will look at a range of art forms—including architecture, painting, sculpture, ceramics, and calligraphy—in relation to such themes as patronage, production, function, and audience. A number of the artworks will be viewed firsthand in local collections. We will also explore the intersection of Islamic art with today's political realities.
Instructor(s): U. Rustem
Area: Humanities.

History of Art
AS.194.101. Introduction to Islam. 3.0 Credits.
Study of Islam, its beliefs and practices in their historical development, from the preaching of Muhammad to the end of the Middle Ages, providing a historically-grounded understanding of Islam
Instructor(s): G. Ferrario
Area: Humanities.

AS.194.201. Jews, Muslims, and Christians in the Medieval World. 3.0 Credits.
The three most widespread monotheisms have much more in common than is generally portrayed: a common founding figure, a partly shared succession of prophets, closely comparable ethical concerns and religious practices, a history of coexistence and of cultural, religious, social and economic interaction. This course will focus on a number of key texts and historical events that have shaped the relationships between Jews, Muslims, and Christians during the Middle Ages and contributed to their reciprocal construction of the image of the "other." The geographical center of the course will be the Mediterranean and the Near and Middle East, a true cradle of civilizations, religions, and exchange.
Instructor(s): G. Ferrario.

AS.194.401. Themes in Medieval Islamic Thought. 3.0 Credits.
This seminar examines medieval Muslim thinkers who addressed themes at the intersection of theology, philosophy, science, and ethics: the definition of the nature of God's attributes, His uniqueness, transcendence and omnipotence; human freewill and the limits of human knowledge; the nature of the world; and the relationship among reason, religion, and science. The course will look at how these and other crucial themes were addressed by major medieval philosophers and philosophical schools not only in Islam, but also in Judaism and Christianity, and highlight similarities and differences among the three major monotheistic faiths.
Instructor(s): G. Ferrario.

History of Art
AS.010.110. Art of the Islamic World. 3.0 Credits.
This course is an introduction to the art of the Islamic world, covering a geography that stretches from Spain to India and a chronology that extends from the seventh century into our own time. Within this rich and varied continuum, we will look at a range of art forms—including architecture, painting, sculpture, ceramics, and calligraphy—in relation to such themes as patronage, production, function, and audience. A number of the artworks will be viewed firsthand in local collections. We will also explore the intersection of Islamic art with today's political realities.
Instructor(s): U. Rustem
Area: Humanities.

Faculty
Director
Lawrence M. Principe
AS.010.329. Building an Empire: Architecture of the Ottoman Capitals, c. 1300–1600. 3.0 Credits.
Centered on modern-day Turkey and encompassing vast territories in Asia, Africa, and Europe, the Ottoman Empire (1299 – 1923) was the longest lived and among the most powerful Islamic states in history, with an artistic tradition to match. This course explores the functional and symbolic role that architecture played during the empire's formative centuries, when three successive capitals — Bursa, Edirne, and Istanbul — served to visualize the sultans' growing claims to universal authority. With reference to mosques, palaces, tombs, and other categories of architecture, the course will examine the buildings in their artistic, social, and political contexts. Themes to be addressed include patronage and audience, architectural practice and the building trade, ceremonial and ritual, topography and urban planning, and the relationship of Ottoman architecture to other traditions.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.330. Art of the Caliphates: Visual Culture and Competition in the Medieval Islamic World. 3.0 Credits.
Despite its modern-day association with a fringe extremist movement, the term “caliphate” was traditionally used to describe the Muslim world at large, the political and spiritual ruler of which bore the title of caliph. The original Islamic caliphate was established in the seventh century as a vast empire centered on the Middle East and extending deep into Africa, Asia, and Europe. It soon broke apart into a series of competing powers, until in the tenth century, three rival dynasties—the Baghdad-based Abbasids, the Spanish Umayyads, and the Fatimids of North Africa—each claimed to be the rightful caliphate. This course will examine how these fascinating political developments and conflicts played out in the realm of art and architecture between the seventh and thirteenth centuries. As well as palaces, mosques, and commemorative buildings, the course will look at media ranging from ceramics and metalwork to textiles and illustrated manuscripts, with many of the artifacts being viewed firsthand in local museum collections. These works will be considered in relation to such themes as patronage, audience, ceremony, and meaning. Particular attention will be paid to how the various caliphates—both in emulation of and competition with one another—used visual culture as a powerful tool to assert their legitimacy.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.436. Orientalism and Occidentalism: The Discourse of the Other in the Visual Arts. 3.0 Credits.
This course explores works of art and architecture that reveal or are informed by the long, complex, and often troubled relationship between the West and the Islamic world. Though extending in scope from the early modern period into our own time, the course focuses on the eighteenth and nineteenth centuries, when East-West artistic interactions were arguably at their liveliest and most charged. Topics to be addressed include Ottoman Baroque architecture, Orientalist painting of the nineteenth century, Qajar portraiture and photography, Islamicate architecture at Western world’s fairs, and the recent Danish cartoons of the Prophet Muhammad. Students will be encouraged to consider the differences as well as commonalities between these various modes of cross-cultural representation and engagement, and to think critically about the political, cultural, and artistic conditions that engendered and shaped them.
Instructor(s): U. Rustem
Area: Humanities
Writing Intensive.

AS.010.636. Orientalism and Occidentalism: The Discourse of the Other in the Visual Arts.
This course explores works of art and architecture that reveal or are informed by the long, complex, and often troubled relationship between the West and the Islamic world. Though extending in scope from the early modern period into our own time, the course focuses on the eighteenth and nineteenth centuries, when East-West artistic interactions were arguably at their liveliest and most charged. Topics to be addressed include Ottoman Baroque architecture, Orientalist painting of the nineteenth century, Qajar portraiture and photography, Islamicate architecture at Western world’s fairs, and the recent Danish cartoons of the Prophet Muhammad. Students will be encouraged to consider the differences as well as commonalities between these various modes of cross-cultural representation and engagement, and to think critically about the political, cultural, and artistic conditions that engendered and shaped them.
Instructor(s): U. Rustem
Area: Humanities.

AS.010.637. Ottoman Baroque and Beyond.
The eighteenth century saw the Ottoman capital of Istanbul transformed by the introduction of a brand-new style of architecture that scholars have dubbed the Ottoman Baroque. Informed, as its name suggests, by Western European models, this new manner of building heralded a permanent shift in late Ottoman visual culture that has been reductively discussed as decadent “Westernization.” This seminar will challenge the conventional wisdom and reconsider the Ottoman Baroque as a timely and sophisticated artistic statement by which the empire reaffirmed its global standing in terms that were both locally rooted and internationally resonant. Topics to be addressed include the semiotics of style; the roles and relationships of patrons, artists, and viewers; architecture as a locus of ceremonial and spectacle; and cross-cultural connections and networks. Although focusing on the architecture of eighteenth-century Istanbul, the seminar will extend into other regions and art forms that demonstrate the impact of the Ottoman Baroque, and it will also consider the style’s afterlife in the context of nineteenth-century Ottoman modernity.
Instructor(s): U. Rustem
Area: Humanities.
Anthropology

**AS.070.204. An introduction to Islamic Intellectual History. 3.0 Credits.**

This course will study the vibrant world of the Seljuks, an Islamic empire that flourished between 1037 and 1157 AD, from Khorasan across Baghdad to Hijaz and Anatolia. As an exploration in intellectual history, we will attempt to understand the social world of the Seljuk Turks through political, religious, and literary texts. We will first read a political treatise, Siyasatnama (The Book of Government), written by Nizam al- Mulk (1018-1092), the formidable minister of the Seljuk Empire, who oversaw the reign of three successive sultans during the second half of the eleventh century and created a strong bureaucratic state for the Seljuks. During his administration, he commissioned the development of madrasas, colleges dedicated to the teaching of Islamic law, theology, literature, and history. The most famous of these madrasas was the Baghdad Nizamiyia where Al-Ghazali (1058-1111) taught from 1190 and 1194. We will read Al-Ghazali’s Deliverance from Error in order to explore the state of religious learning at the peak of the Islamic Golden Age. Having discussed the political and religious foundations of Islamic orthodoxy in the eleventh century, next we turn to the rise of heterodox movements that challenged the authority of the Seljuk state. We will briefly examine the history of the Ismaili branch of Shia Islam, focusing on the politico-religious ideas of its most potent representative, Hassan-i Sabbah (1050s-1124). Finally, we will end our class with the Rubaiyyat of Omar Khayyam (1048-1131), the prominent poet and polymath of the eleventh century.

Instructor(s): B. Polat
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.070.230. From Jihad to Revolution: The Political Struggles of Women in the Middle East. 3.0 Credits.**

The course explores the role of women as political prisoners, combatants and activists in the modern history of the Middle East using a multidisciplinary approach. It explores the history of women’s engagement in political struggles in the Middle East over the long duree starting with anti-colonial movements in the 20th century up until the recent uprisings known as the “Arab Spring”. The course is geared towards the examination of the ways in which politics, in a broad sense, is gendered in the Middle East by examining how the social and political construction of women as political subjects influence the nature and practice of political life, as well as the ways in which sexual difference has served as a basis for social and political organization.

Instructor(s): F. Halbouni
Area: Humanities, Social and Behavioral Sciences.

**AS.070.267. Culture, Religion and Politics in Iran. 3.0 Credits.**

This is an introductory course for those interested in gaining basic knowledge about contemporary Iran. The focus will be on culture and religion and the ways they in which they become interwoven into different kinds of political stakes.

Instructor(s): N. Haeri
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.070.333. Theologies of Political Life. 3.0 Credits.**

This course explores the relationship between modern political forms and theological traditions. Looking at developments both in the West and the postcolonial world, we will examine the multiple ways in which theological traditions have continued to inform how political life is conceived and pursued. In particular, we will focus on the relation between liberalism and the Christian tradition; the turn to messianism in critical theory; the transformation of the shari?at into a legal form; and its imbrication in anti-colonial politics.

Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**AS.070.372. Religion and Media. 3.0 Credits.**

This course examines the ways in which conventional and non-conventional media recreate or transform religious experience in modern life. Increasingly, religion is experienced not only in sacred spaces and as ritual prescriptions, but also through the information that is disseminated through radio, TV, and the Internet, as well as in consumer culture and political speeches. Beginning with this proposition that our ideas about religion are shaped not only by historical and scriptural legacies, but as well as by material practices and other sundry conditions of mediation, of which our present times supply many, we will reexamine questions of revelation, belief, spirituality, ethereality, and ritual practice are constituted by these irreducible ways, thus complicating the neat separation of religion and secularism, or, for that matter, religion and culture.

Instructor(s): S. Bagaria
Area: Humanities, Social and Behavioral Sciences.

**AS.070.417. Political Spirituality. 3.0 Credits.**

This course explores forms of political action that have emerged at the interface of modern revolutions with religious traditions. It focuses on the Middle East during the twentieth century and the civil rights struggle in the American south. We will attempt to trace the genealogy of these forms of action in the Islamic and Christian traditions, as well as examine their influence on the political thought of our own time.

Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences.

**AS.070.423. Anthropology of Poetry and Prayer. 3.0 Credits.**

What kind of activity is prayer? Are we talking to God(s), to our ancestors, to ourselves? What are the differences between choosing our own words and repeating the words of an established prayer? The course will explore these and similar questions with particular attention to the language of prayers across a number of religious traditions.

Instructor(s): N. Haeri
Area: Humanities, Social and Behavioral Sciences.

**History**

**AS.100.212. Freshman Seminar: Jews in the Medieval Mediterranean: The Politics of Conquest under Crescent and Cross. 3.0 Credits.**

How can Jewish history help us understand the politics of Islamic and Christian states in Sicily, Spain, and Palestine in the age of Crusade and holy war? Freshman only

Instructor(s): B. Goldman
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.234. The Making of the Muslim Middle East, 600-1100 A.D. 3.0 Credits.
A survey of the major historical transformations of the region we now call the 'Middle East' (from late antiquity through the 11th century) in relation to the formation and development of Islam and various Muslim empires. Cross-listed with Near Eastern Studies and the Program in Islamic Studies.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.362. Children and Childhood in the Middle Ages. 3.0 Credits.
Seminar on the history of childhood and ideas of childhood around the medieval Mediterranean; themes include child custody; medieval education and punishment; parent-child private letters; child mortality and the arts of bereavement/consolation. Cross-listed with the Program in Islamic Studies and Near Eastern Studies.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.374. Conquest, Conversion, and Language Change in the Middle Ages. 3.0 Credits.
Examines cases of imperial conquest and attendant religious transformation (Christianization; Islamization) and language change in the medieval Mediterranean (Europe and Middle East), e.g., transition from Latin to vernacular languages in Europe; Arabization; translation movements.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.387. Everyday Life in the Medieval Middle East. 3.0 Credits.
In this seminar, students will explore the daily lives of non-elites in medieval Egypt (i.e., average folk, not kings in palaces) — including their food and cooking; clothes (and government edicts regulating fashion); the houses they inhabited; their marriage patterns, divorce rates, and child custody battles; and the burden of taxes on the working poor (e.g., urban craftsmen). We will examine and discuss artifacts and documents, including surviving hats (stuffed with recycled documents), private letters, marriage contracts (and the clauses women inserted into them), petitions for charity, and court records.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.456. Getting Medieval? Public Violence in the Middle Ages. 3.0 Credits.
Traditional studies and popular culture often consider violence as a hallmark of medieval life and hence, present it as a fundamental difference between a 'brutal and violent' Middle Ages and a 'civilized and humane' (Western) modernity. To evaluate these claims and images, we will examine different forms of violence in medieval societies — European and Middle Eastern — especially (i) martyrdom, (ii) communal violence, and (iii) public punishment. After exploring the specific cultural meanings of these practices, we will re-examine those modern polemics that invoke 'the medieval' (often vis-à-vis non-Western traditions and societies).
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.646. Marvels and Wonder in medieval Arabic Culture.
Explores the concept of marvels in different genres of medieval Arabic culture: Qur’anic exegesis; travel literature; ‘ethnography’; cosmography and geography; marvels of the natural world (e.g., hermaphrodites); Muslim views of pre-Islamic (‘pagan’) monuments.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

Near Eastern Studies
AS.130.368. Nomads, Tyrants and Kings: Water in the Ancient Near East. 3.0 Credits.
This course explores economic and social histories of water in the ancient Near East. It examines water’s diverse roles in ancient Mesopotamian, Egyptian, Levantine and South Arabian agriculture, politics, ritual and religion, including water’s interconnected significance in Judaism, Christianity, and Islam. Taught jointly with AS.131.615.
Instructor(s): M. Harrower
Area: Humanities.

History of Science Technology
AS.140.301. History of Science: Antiquity To Renaissance. 3.0 Credits.
The first part of a three-part survey of the history of science. This course deals with the origins, practice, ideas, and cultural role of scientific thought in Graeco-Roman, Arabic/Islamic, and Medieval Latin/Christian societies. Interactions across cultures and among science, art, technology, and theology are highlighted.
Instructor(s): G. Fenario; L. Principe
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Philosophy
AS.150.462. Islamic Political Philosophy. 3.0 Credits.
An introduction to the history of Islamic political philosophy, primarily focused on two flashpoints of encounter between the religion of Islam and other philosophical/political systems — an early one with ancient Greek philosophy (especially in the works of Plato and Aristotle), and a period of interface with modern Western secular political thought, from the late 19th century to present. Our goal will be to try to understand some of the varying responses in each period as Muslim thinkers seek authentic engagement with external and internal trends, both religious and philosophical. The focus will be on primary texts from philosophically engaged thinkers (who may or may not consider themselves philosophers).
Instructor(s): S. Ogden
Area: Humanities.

Political Science
AS.190.394. Comparative Politics of the Middle East and North Africa. 3.0 Credits.
This course examines the domestic, regional, and transnational politics of the Middle East and North Africa. The class is organized into three units. The first examines major armed conflicts — anti-colonial, intra-state, and inter-state — from 1948 through the 1990s. It uses these historical moments as windows onto key issues in Middle Eastern and North African political issues such as external intervention/occupation, human rights, sectarianism, social movements, and memory politics. Unit Two focuses on policy relevant issues such as democratization, minority populations, religion and politics, and gender. In Unit Three, students will explore the politics of the Arab Uprisings through critical reading and discussion of new (post-2011) scholarship on MENA states, organizations, and populations. Enrollment limited to Political Science and International Studies majors.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences.
AS.191.335. Arab-Israeli Conflict. 3.0 Credits.
The course will focus on the origin and development of the Arab-Israeli conflict from its beginnings when Palestine was controlled by the Ottoman Empire, through World War I, The British Mandate over Palestine, and the first Arab-Israeli war (1947-1949). It will then examine the period of the Arab-Israeli wars of 1956, 1967, 1973, and 1982, the Palestinian Intifadas (1987-1993 and 2000-2005); and the development of the Arab-Israeli peace process from its beginnings with the Egyptian-Israeli treaty of 1979, the Oslo I and Oslo II agreements of 1993 and 1995, Israel’s peace treaty with Jordan of 1994, the Road Map of 2003; and the periodic peace talks between Israel and Syria. The conflict will be analyzed against the background of great power intervention in the Middle East, the rise of political Islam and the dynamics of Intra-Arab politics, and will consider the impact of the Arab Spring.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences.

AS.375.115. First Year Arabic. 4.5 Credits.
Continuation of AS.375.115. Introductory course in speaking, listening, reading, and writing Modern Standard Arabic. Presents basic grammatical structures and a basic vocabulary. Through oral-aural drill in classroom, tapes in Language Laboratory, and reading/writing exercises, students attain a basic level of competence on which they can build in subsequent years of study. No authentic material—written, audio, and visual—will be used, and culture will be further expanded on as a fifth skill. Recommended Course Background: AS.375.115-116 or equivalent.
Prerequisites: AS.375.115 or instructor permission
Instructor(s): S. Jafire
Area: Humanities.

AS.375.116. Second Year Arabic. 4.0 Credits.
Designed to bring students up to competency level required for third/fourth year Arabic. Students will consolidate and expand their mastery of the four basic skills acquired in AS.375.115-116. More authentic material—written, audio, and visual—will be used, and culture will be further expanded on as a fifth skill. Recommended Course Background: AS.375.115-116 or equivalent.
Prerequisites: AS.375.116 or equivalent.
Instructor(s): Staff
Area: Humanities.

AS.375.215. Second Year Arabic II. 4.0 Credits.
Continuation of AS.375.215. Designed to bring students up to competency level required for third/fourth year Arabic. Students will consolidate and expand their mastery of the four basic skills acquired in AS.375.115-116. More authentic material—written, audio, and visual—will be used, and culture will be further expanded on as a fifth skill. Recommended Course Background: AS.375.215 or permission required.
Prerequisites: AS.375.215 or instructor permission
Instructor(s): S. Jafire
Area: Humanities.

AS.375.301. Third Year Arabic. 3.0 Credits.
Designed to enhance students’ ability to read, discuss, and write about various topics covered in traditional and contemporary Arabic texts. Recommended Course Background: AS.375.216 or equivalent.
Prerequisites: AS.375.316 or instructor permission
Instructor(s): S. Jafire
Area: Humanities.

AS.375.401. Fourth Year Arabic. 2.0 Credits.
This is an introductory course to different periods of the Arabic literature. Selections of famous Arabic poetry and short prose works are the substance of the course.
Prerequisites: AS.375.302 or equivalent.
Instructor(s): Staff
Area: Humanities.

AS.375.402. Fourth Year Arabic II. 2.0 Credits.
This is an introductory course to different periods of the Arabic literature. Selections of famous Arabic poetry and short prose works are the substance of the course. Continuation of AS.375.401. Recommended Course Background: AS.375.302 or equivalent.
Prerequisites: AS.375.401 or equivalent.
Instructor(s): F. Ismail
Area: Humanities.

The Leonard and Helen R. Stulman Jewish Studies Program
http://krieger.jhu.edu/jewishstudies/

The Leonard and Helen R. Stulman Jewish Studies Program was founded in 2002 to coordinate the many academic activities at Johns Hopkins dedicated to the study of Jewish history, literature, language, philosophy, politics, and religion. The program gives students the opportunity to explore over three millennia of Jewish culture, ranging from ancient Israel to the present. The Stulman Program sponsors visiting professors and course offerings in a wide variety of disciplines, awards undergraduate travel funds and graduate fellowships, and provides many opportunities for students, faculty, and the general public to participate in a wide range of lectures, conferences, and other special events.
The program offers a minor to students interested in the many dimensions of Jewish life, religion, and culture, from ancient times to the present. It will also interest students who wish to study cultures and civilizations in which thinking about Jews and Judaism played an important role, that is, students interested in Christianity, Islam, or the culture of global modernity. Because of its interdisciplinary nature, the Jewish studies minor offers students access to a broad array of humanities and social sciences disciplines. It therefore serves as a good complement to many majors, as well as providing indispensable intellectual training to anyone interested in Jewish professional life.

Minor in the Leonard and Helen R. Stulman Jewish Studies Program

The Jewish Studies minor requires a minimum of six courses (amounting to at least 18 credits) selected from those approved by the Advisory Committee of the Jewish Studies Program. The courses must be from at least two departments, and at least three must be upper-level courses (300-level or above). All courses applied towards the minor must be taken for a letter grade and a grade of C- or better must be earned. In addition, only two courses with any single professor can be counted towards the minor.

The requirements for a minor in Jewish studies are as follows:

**Six Jewish Studies Courses**

<table>
<thead>
<tr>
<th>Component</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three courses at any level</td>
<td>9</td>
</tr>
<tr>
<td>Three 300-level or higher courses</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>18</td>
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</tbody>
</table>

Students may take up to two courses in Hebrew or Yiddish language study to apply towards the minor requirements.

For current faculty and contact information go to http://krieger.jhu.edu/jewishstudies/people/

**Faculty**

**Professors**

Steven R. David  
(Political Science): Vice Dean for Centers and Programs: international relations, security studies, comparative politics.

Benjamin Ginsberg  
David Bernstein Professor (Political Science): Director, Washington Center for the Study of American Government: American government and politics, political development.

Theodore J. Lewis  

Kyle P. McCarter  

Yitzhak Melamed  
(Philosophy): Jewish Philosophy, (esp. Maimonides and Crescas), Rabbinics, Kabbalah and Hasidism.

Glenn M. Schwartz  

Eric Sundquist, Emeritus

Andrew W. Mellon Professor of the Humanities: American Literature and Culture, including African American and Jewish American, Literature of the Holocaust.

**Associate Professors**

Pawel Maciejko  
Stulman Chair in Rabbinics and Traditional Judaism; (History) Jewish mystical tradition

Kenneth B. Moss  
Felix Posen Associate Professor (History); Modern Jewish history, Russia and Eastern Europe, Yishuv/Palestine and Israel, Jewish political thought, nationalism, theory and practice of cultural history.

Neta Stahl  
(GRLL); Director, Program in Jewish Studies: Comparative and Modern Hebrew literature, religion and literature

**Assistant Professor**

Samuel Spinner  
(GRLL), Tandetnik Chair in Yiddish Language, Literature and Culture; Yiddish Literature, 19th and 20th century German-Jewish culture and literature, Holocaust Studies

**Lecturers**

Zvi Cohen  
(Center for Language Education)

Ellen Ann Robbins  
(Near Eastern Studies).

Beatrice Lang  
(Department of German and Romance Languages and Literatures): Zelda and Myer Tandetnik Lecturer in Yiddish.

For current course information and registration go to https://sis.jhu.edu/classes/
Courses

Cross Listed Courses

English

AS.060.332. Jewish American Fiction. 3.0 Credits.
This course will consider the development of Jewish American fiction over the past century through an examination of major authors and topics, with particular attention to novels whose historical trajectories reach geographically back and forth from America to Europe, and temporally back and forth across the Holocaust, the century’s defining event. These novels thus frequently have multiple settings and treat familial, communal, and intellectual life, along with topics such as emigration, anti-Semitism, and religious belief, over a span of several generations. The list includes authors whose works first appeared in Yiddish (Lamed Shapiro and Isaac Bashevis Singer) and authors whose sensibilities are decidedly American, but all write with attention to the tenuous assimilation, dislocation, trauma, and linguistic complexity that often marked twentieth-century Jewish life, no less in the United States at times than in Europe. Works studied will include: Dara Horn, In the Image; Rebecca Goldstein, Mazel; Bernard Malamud, The Fixer; Lamed Shapiro, The Cross and Other Jewish Stories; Isaac Bashevis Singer, Shosha; Cynthia Ozick, The Shawl; Nicole Krauss, A History of Love; Jerzy Kosinski, Steps; Philip Roth, Nemesis; Shalom Auslander, Hope: A Tragedy: A Novel
Instructor(s): E. Sundquist
Area: Humanities
Writing Intensive.

AS.060.382. Jewish American Literature. 3.0 Credits.
A survey of major works, principally novels.
Instructor(s): E. Sundquist
Area: Humanities
Writing Intensive.

History

AS.100.129. Introduction to Modern Jewish History. 3.0 Credits.
Jewish history 1750-present in Europe, the Near East, the US, Israel; the challenges of modernity and new forms of Jewish life and conflict from Enlightenment and emancipation, Hasidism, Reform and Orthodox Judaism to capitalism and socialism; empire, nationalism and Zionism; the Holocaust. Extensive attention to US Jewry and State of Israel.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.268. Jewish and Christian mysticism in the Middle Ages and the Early Modern Period. 3.0 Credits.
This course will trace the historical development of Jewish and Christian mysticism between the 12th and the 17th centuries.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.308. Introduction to the History of Jewish Mysticism. 3.0 Credits.
The course will familiarize the student with the history of the main phenomena of Jewish mysticism from the ancient times to the present.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.315. Jewish Political Thought and Social Imagination, 1880-1940. 3.0 Credits.
How a range of Jewish thinkers, activists, and creative writers grappled intellectually with the challenge of the nation-state, the rise and collapse of empires, antisemitism as a political phenomenon, the nature of politics and political action, the nature of modern societies, and the question of Jewish self-determination and sovereignty, 1880-1940. Readings by Herzl, Bernard Lazare, Freud, Kafka, Leshtshinsky, Arendt, Adorno, Michael Chabon, among others.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.334. Jewish Political Thought and Social Imagination, 1880-1940. 3.0 Credits.
How a range of Jewish thinkers, activists, and creative writers grappled intellectually with the challenge of the nation-state, the rise and collapse of empires, antisemitism as a political phenomenon, the nature of politics and political action, the nature of modern societies, and the question of Jewish self-determination and sovereignty, 1880-1940. Readings by Herzl, Bernard Lazare, Freud, Kafka, Leshtshinsky, Arendt, Adorno, Michael Chabon, among others.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences.

AS.100.343. Diaspora, Nation, Race, and Politics. 3.0 Credits.
For millions of people across the globe, political fate in the 20th century was defined at the intersection of diaspora, race, and nation — and this may be true in the 21st century as well. This course, a collaborative effort involving a historian and a political scientist, explores the parallels and divergences in the deployment of these terms in nationalist and transnational mobilization, literature and aesthetics, and group identity formation in Eastern Europe, Africa and the New World of the Americas. Set against the backdrop of the fall of significant empires in the late 19th and early 20th centuries, we will explore themes of migration, human rights, the nation-state system, and racism through history, political sociology, and political and social theory. We will pay particular attention to the theoretically exemplary Jewish and Black experiences of diaspora, race, and nation, engaging both with how those experiences were specially shaped by the imposition of national and racial logics and with Black and Jewish politics and thought in relation to those categories. Readings include Max Weber, W. E. B. Du Bois, Booker T. Washington, Theodor Herzl, Hannah Arendt, Benedict Anderson, Rogers Brubaker, Andrew Zimmerman, Michele Mitchell, David Scott.
Instructor(s): K. Moss; M. Hanchard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.345. Religion, Secularity, and Nationhood in Modern Jewish Identity Politics. 3.0 Credits.
How have ethnonational, religious, and secular forms of self-definition played out in Jewish life over the past hundred years, and what sorts of relationships are taking shape between them now? Particular foci include: religious revival in Israel and the fate of Zionism’s ostensibly secular nationalist project in comparative perspective (Ravitzky, Walzer, Friedland); the surprising flourishing of kabbalistic/mystical thought in contemporary Jewish life (Garb); varieties of secular and religious visions of Jewish collective identity (Ohana, Lustick); new and resurgent forms of Judaism in the US; religion and gender (Fader), among other topics. Time at end of semester for independent reading and research.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.363. The Development of the Sabbatian Movement. 3.0 Credits.
This course examines the development of Sabbatianism, the most important messianic movement in the history of Judaism. We shall discuss the messianic claims of Sabbatai Tsevi, the spread of religious fervor among the Jews of Middle East, Europe, and North Africa, rabbinic opposition to the movement, and shall compare it to similar phenomena in Islam and Christianity. Special attention will be paid to reading of primary Sabbatian sources in English translation.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.
AS.100.364. Sacrilegious Jews: Accusations of Ritual Crime in Pre-Modern Europe. 3.0 Credits.
This course will examine the history of the accusations of the Jews of ritual crime (blood libel, host desecration etc.) in pre-modern Europe.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.369. Themes and Concepts in Jewish History. 3.0 Credits.
The course will introduce students to the main themes and debates in Jewish historiography.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.371. Jewish History in the 20th Century. 3.0 Credits.
Jewish history, politics, and culture across a century of enormous transformations and transformative enormities in Europe, the US, and the Middle East. Topics include: impacts on Jewish life of World War I, the Russian Revolution, and the post-imperial reordering of the Eastern European and the Middle East; Zionism and other modes of Jewish contestatory politics; the consolidation of American Jewry, Nazism and the Holocaust in Europe; formation and development of the State of Israel; the global reordering of Jewish life amid cross-currents of the Cold War, conflict in the Middle East, and success in the US. Substantial attention to recent and contemporary history including the dramatic changes in Israeli society and polity over the past forty years and the ongoing Israeli-Palestinian conflict. Each week, professor will provide detailed background lecture during first session and second session will be devoted to in-depth discussion of key primary texts and historical monographs that capture Jewish responses to 20th century processes and events.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.412. Jewish History in British Mandatory Palestine 1917-1947. 3.0 Credits.
Recent historical writing on Jewish politics, culture, and society in British Mandatory Palestine, 1917-1947. Significant attention will also be paid to work on Palestinian Arab society and politics and to Jewish-Arab-British relations.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.611. Kabbalah and the Enlightenment: Reading 'The Manuscript' Found in Saragossa.
The course will discuss the European Enlightenment's attitude to the Jewish esoteric lore. As a lens to discuss this topic, we shall use Jan Potocki's novel "The Manuscript Found in Saragossa".
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.643. Jewish Paths Through Modernity.
Intensive introduction to the key trends and trajectories in modern Jewish history and the major themes in Jewish historiography. Intended to serve both graduate students outside the Jewish history field and graduate students pursuing a field in modern Jewish history.
Instructor(s): K. Moss
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.656. Reading Koselleck.
The course will be devoted to close reading of the works of Reinhardt Koselleck.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

AS.100.657. Reading Koselleck.
The course will be devoted to close reading of the works of Reinhardt Koselleck.
Instructor(s): P. Maciejko
Area: Humanities, Social and Behavioral Sciences.

Near Eastern Studies
AS.130.140. Hebrew Bible / Old Testament. 3.0 Credits.
The Bible is arguably the most read and yet most misinterpreted book of all time, one of the most influential and yet most misapplied work of literature. The Hebrew Bible (Old Testament) is Scripture to Jews and Christians yet also a rich collection of literature w/ numerous literary genres that has been highly influential on secular Western culture. At its core, it is our most important literary source that (when wed with archaeology) helps us to understand the people and culture of Iron Age Israel and Judah. This is an introductory course surveying of the books of the Hebrew Bible (Old Testament) giving primary attention to the religious ideas they contain and the ancient contexts in which they were composed. Topics include: The Academic Study of Religion, Ancient Creation Accounts, Ancestral Religion, The Exodus and Moses, Covenant, Tribalism and Monarchy, The Ideology of Kingship, Prophecy, Priestly Sources, Psalms, Wisdom Literature, and Apocalyptic Thought.
Instructor(s): T. Lewis
Area: Humanities.

AS.130.202. Ancient Mythology. 3.0 Credits.
This course explores the mythology of the ancient Near East from the invention of writing in Sumer in 3000 B.C. until the conquest of Alexander the Great near the end of the first millennium B.C. Mythological texts from Mesopotamia, Egypt, Anatolia, the Levant, and the Bible will be read from a comparative perspective. Special attention is paid to the origin and development of the epic, culminating in the great Epic of Gilgamesh, but considerable time is also given to the vast mythological and historical literature, and such diverse genres as love poetry, proverbs, humorous dialogues, Omens, and legal and medical texts. All readings are in English translation.
Instructor(s): P. Delnero
Area: Humanities.

AS.130.216. History of the Jews in Modern Times, from the Middle Ages to 1917. 3.0 Credits.
A broad survey of the significant political and cultural dynamics of Jewish history in the Medieval, Early-Modern, and Modern Eras.
Instructor(s): D. Katz
Area: Humanities.

AS.130.301. History of Ancient Syria-Palestine. 3.0 Credits.
A survey of the history of Ancient Syria and Canaan, including Ancient Israel.
Instructor(s): J. Lauinger
Area: Humanities.

AS.130.302. History of Ancient Syria-Palestine II. 3.0 Credits.
A survey of the history of Ancient Syria and Canaan, including ancient Israel. Taught with AS.134.661. Cross-listed with Jewish Studies.
Instructor(s): P. McCarter
Area: Humanities.
AS.130.330. The Garden of Eden. 3.0 Credits.
References to the story of the Garden of Eden can be found in every significant issue of our time, from sex to politics, from race to the environment. The course will examine the story itself as well as how it's been interpreted, leading up to today. Enthusiastic participation required.
Instructor(s): E. Robbins
Area: Humanities.

AS.130.341. Traditionalism vs. Orthodoxy in the Modern Era: The Case of Judaism. 3.0 Credits.
During the Modern Era in European history, the Traditionalist Jewish civilization of Europe that had evolved over many centuries went into deep crisis. The new political, social, and intellectual realities which characterized Modernity seriously challenged, overwhelmed, and indeed threatened to destroy the Jewish Traditionalist culture and society. In response, different Traditionalist thinkers and communities evolved a number of strategies for surviving in a modern environment, strategies that unexpectedly transformed Traditionalism into something different, which came to be called Orthodox Judaism. This course explores this process of transformation, which has had an important impact on Jewish life in the modern and post-modern eras. Cross-listed with Jewish Studies.
Instructor(s): D. Katz
Area: Humanities.

AS.130.343. Dead Sea Scrolls-English. 3.0 Credits.
A survey of the manuscripts found at Qumran and other sites near the Dead Sea.
Instructor(s): D. Gropp
Area: Humanities.

AS.130.346. Introduction to the History of Rabbinic Literature. 3.0 Credits.
Broadly surveying classic rabbinic literature, including the Talmud and its commentaries, the legal codes and the response, this seminar explores the immanent as well as the external factors that shaped the development of this literature, the seminal role of this literature in Jewish self-definition and self-perception, and the role of this literature in pre-modern and modern Jewish culture.
Instructor(s): D. Katz
Area: Humanities.

AS.130.348. Religious Law Wrestles With Change: The Case of Judaism. 3.0 Credits.
Description: "How does a religious system which defines its ancient laws as God-given and unchangeable apply them to radically different and changing social, political and intellectual situations? This course explores the literature of "Questions and Answers"(She'elot u-Teshuvot), the Jewish legal responsa which have struggled to match Jewish religious law to modern life for fifteen centuries. A sweeping survey of Jewish history as revealed by one of its most impenetrable yet fascinating sources. Cross-listed with Jewish Studies.
Instructor(s): D. Katz
Area: Humanities.

AS.130.359. Reading the Talmud in the Post-Talmudic Era. 3.0 Credits.
Life and Death, Survival and Martyrdom, in the Literature of Post-Talmudic Rabbinic Judaism. Readings in the Original Sources (Knowledge of Hebrew Required). Cross-listed with Jewish Studies.
Instructor(s): D. Katz
Area: Humanities.

AS.130.373. Prophets and Prophecy in the Bible. 3.0 Credits.
From thundering voices of social justice to apocalyptic visionaries, biblical prophets have been revered by Jews, Christians and Muslims for thousands of years. They have inspired civic leaders such as Martin Luther King Jr. yet also provided fodder for modern charlatans promising a utopian future. Yet who were these individuals (orators? politicians? diviners? poets?) and what was the full range of their message as set against the Realpolitik world of ancient Israel, Iraq, Egypt, Syria and Jordan?
Instructor(s): T. Lewis
Area: Humanities.

AS.130.376. Ancient Magic and Ritual. 3.0 Credits.
This course will introduce students to the vast body of rituals that were practiced and performed in antiquity, with a particular emphasis on rituals from ancient Mesopotamia, Egypt, and the Hebrew Bible. In addition to examining rituals from a comparative perspective, anthropological and sociological studies of ritual will be read and discussed to shed light on the social, cultural, and political significance of ritual in the ancient world and beyond.
Instructor(s): P. Delnero
Area: Humanities.

AS.130.387. The Poetics of Biblical Prose and Verse. 3.0 Credits.
An exploration of how ancient Israelite techniques of literary textual and inter-textual patterning contributes to cohesion and meaning in biblical prose and verse. Attention will be given to the distinguishing characteristics of Hebrew verse in relation to prose, and to a range of different kinds of prose in Israelite literature. These poetics will be exemplified in close readings of selected texts from the Hebrew Bible in English.
Instructor(s): D. Gropp
Area: Humanities.

AS.130.440. Elementary Biblical Hebrew. 3.0 Credits.
Introduction to the grammar, vocabulary, and writing system of biblical Hebrew.
Instructor(s): J. Estrada
Area: Humanities.

AS.130.441. Elementary Biblical Hebrew. 3.0 Credits.
Survey of grammar and reading of simple texts. (Credit given only on completion of AS.130.440 and AS.130.441). May not be taken on a satisfactory/unsatisfactory basis.
Instructor(s): R. Liebermann
Area: Humanities.

AS.130.442. Readings - Hebrew Prose. 3.0 Credits.
Reading of biblical Hebrew prose, especially from the Pentateuch, Joshua, Judges, Samuel, and Kings. Cross-listed with Jewish Studies.
Instructor(s): R. Liebermann
Area: Humanities.

AS.130.443. Reading Of Hebrew Prose. 3.0 Credits.
Reading of Biblical Hebrew prose, especially from the Pentateuch, Joshua, Judges, Samuel, and Kings.
Instructor(s): K. Medill
Area: Humanities.

AS.130.446. Readings - Hebrew Narrative and Poetry. 3.0 Credits.
Intermediate readings in a variety of narratives with some exposure to poetic text
Instructor(s): K. Medill
Area: Humanities.
AS.130.447. Readings - Hebrew Narrative and Poetry. 3.0 Credits.
Intermediate readings in a variety of narratives with some exposure to poetic text. A continuation of AS.130.446.
Instructor(s): K. Medill
Area: Humanities.

AS.134.604. The Book Of Job.
Reading the Hebrew text of the book of Job with attention to philology, textual criticism, and various aspects of interpretation.
Instructor(s): T. Lewis
Area: Humanities.

Translation, textual, philological, prosodic, literary and thematic analysis of Isaiah 40-55, with focus on how Hebrew verse as distinct from prose is constructed.
Instructor(s): D. Gropp
Area: Humanities.

A rapid reading course aimed at increasing proficiency in reading the Hebrew text of the book of Ezekiel. Various aspects of translation and interpretation will be studied (e.g., grammar, textual criticism, Philology) including literary, historical, and theological questions. Cross-listed with Jewish Studies.
Instructor(s): T. Lewis.

AS.134.612. Seminar in Ancient Israelite Religion.
Topics include history of scholarship, methodology, representations of deity, the aniconic tradition, solar Yahwism, sacred space, blood rituals, passover, royal cult, family religion, divination, prophecy, incantations, etc. Cross-listed with Biblical Studies.
Instructor(s): T. Lewis.

AS.190.344. Seminar In Anti-Semitism. 3.0 Credits.
Jews exercise a good deal of power in contemporary America. They are prominent in a number of key industries, play important roles in the political process, and hold many major national offices. For example, though Jews constitute barely two percent of America's citizens, about one-third of the nation's wealthiest 400 individuals are Jewish and more than ten percent of the seats in the U.S. Congress are held by Jews. One recent book declared that, “From the Vatican to the Kremlin, from the White House to Capitol Hill, the world’s movers and shakers view American Jewry as a force to be reckoned with.” Of course, Jews have risen to power in many times and places ranging from the medieval Muslim world and early modern Spain through Germany and the Soviet Union in the 20th century. In nearly every prior instance, though, Jewish power proved to be evanescent. No sooner had the Jews become "a force to be reckoned with" than they found themselves banished to the political margins, forced into exile or worse. Though it may rise to a great height, the power of the Jews seems ultimately to rest on a rather insecure foundation. Cross-listed with Jewish Studies. Course is open to juniors and seniors.
Instructor(s): B. Ginsberg
Area: Social and Behavioral Sciences
Writing Intensive.

AS.150.428. Spinoza's Theological Political Treatise. 3.0 Credits.
The course is an in-depth study of Spinoza's Theological-Political Treatise. Among the topics to be discussed are: Spinoza's Bible criticism, the nature of religion, philosophy and faith, the nature of the ancient Hebrew State, Spinoza's theory of the State, the role of religion in Spinoza's political theory, the freedom to philosophize, the metaphysics of Spinoza's Theological-Political Treatise, and finally, the reception of the TTP.
Instructor(s): Y. Melamed.

AS.150.435. Maimonides' Guide of the Perplexed & Political Theology.
3.0 Credits.
The seminar is an in-depth study of Maimonides' magisterial work, the Guide of the Perplexed. Special attention will be given to Maimonides' views about the political functions of religion. We will also read modern commentaries and responses to the Guide, by Leibniz, Spinoza, and Salomon Maimon.
Instructor(s): D. Katz; Y. Melamed
Area: Humanities.

AS.150.483. Topics in Jewish Philosophy: Heresy. 3.0 Credits.
Hassidism is the ecstatic religious movement that emerged in East European Jewry in the mid-eighteenth century. In this research seminar we will concentrate on the teachings and activities of the circle of Dov Ber of Mezrich between 1760 and 1772. We will study both internal and external sources (such as Salomon Maimon's report in his Lebensgeschichte). All materials will be available in English translation, though reading knowledge of Hebrew would be an asset.
Instructor(s): Y. Melamed.

AS.190.344. Seminar In Anti-Semitism. 3.0 Credits.
Jews exercise a good deal of power in contemporary America. They are prominent in a number of key industries, play important roles in the political process, and hold many major national offices. For example, though Jews constitute barely two percent of America's citizens, about one-third of the nation's wealthiest 400 individuals are Jewish and more than ten percent of the seats in the U.S. Congress are held by Jews. One recent book declared that, "From the Vatican to the Kremlin, from the White House to Capitol Hill, the world's movers and shakers view American Jewry as a force to be reckoned with.” Of course, Jews have risen to power in many times and places ranging from the medieval Muslim world and early modern Spain through Germany and the Soviet Union in the 20th century. In nearly every prior instance, though, Jewish power proved to be evanescent. No sooner had the Jews become "a force to be reckoned with" than they found themselves banished to the political margins, forced into exile or worse. Though it may rise to a great height, the power of the Jews seems ultimately to rest on a rather insecure foundation. Cross-listed with Jewish Studies. Course is open to juniors and seniors.
Instructor(s): B. Ginsberg
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.434. Does Israel Have a Future?. 3.0 Credits.
Israel is one of the only countries whose existence is openly challenged. This class will examine the future of Israel focusing on international and domestic threats to its continued existence as a Jewish democracy. Outside threats to be considered include nuclear attack and the growing international movement to delegitimize Israel. Domestic challenges include demographic changes, the role of religion in governance, and doubts as to whether one can be a Jewish state and still be a democracy. Lessons from the destruction of the ancient Israelite kingdoms and from contemporary state deaths will be included. The course will conclude by considering efforts that Israel can undertake to meet the threats it faces.
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.191.315. The Domestic Politics of Israel. 3.0 Credits.
Israel's politics and history are complex, involving multiple military conflicts, domestic struggles and dynamic international relationships. This course will focus on Israel's domestic politics by tracing the story of the development of its party system and the parties that compose it. A parliamentary democracy with a proportional representation electoral system, Israel's party system includes multiple parties who represent the various segments of Israeli society. What are the origins of this party system and the parties that compose it? What changes have they experienced and what are the factors that influence those changes? Who are the important actors and what might be motivating them? These questions and others will serve as our guide on a journey to a better understanding of Israel's domestic politics.
Instructor(s): A. Dolinsky
Writing Intensive.

AS.191.335. Arab-Israeli Conflict. 3.0 Credits.
The course will focus on the origin and development of the Arab-Israeli conflict from its beginnings when Palestine was controlled by the Ottoman Empire, through World War I, The British Mandate over Palestine, and the first Arab-Israeli war (1947-1949). It will then examine the period of the Arab-Israeli wars of 1956, 1967, 1973, and 1982, the Palestinian Intifadas (1987-1993 and 2000-2005); and the development of the Arab-Israeli peace process from its beginnings with the Egyptian-Israeli treaty of 1979, the Oslo I and Oslo II agreements of 1993 and 1995, Israel's peace treaty with Jordan of 1994, the Road Map of 2003; and the periodic peace talks between Israel and Syria. The conflict will be analyzed against the background of great power intervention in the Middle East, the rise of political Islam and the dynamics of Intra-Arab politics, and will consider the impact of the Arab Spring.
Instructor(s): R. Freedman
Area: Social and Behavioral Sciences.

Islamic Studies
AS.194.201. Jews, Muslims, and Christians in the Medieval World. 3.0 Credits.
The three most widespread monotheisms have much more in common than is generally portrayed: a common founding figure, a partly shared succession of prophets, closely comparable ethical concerns and religious practices, a history of coexistence and of cultural, religious, social and economic interaction. This course will focus on a number of key texts and historical events that have shaped the relationships between Jews, Muslims, and Christians during the Middle Ages and contributed to their reciprocal construction of the image of the “other.” The geographical center of the course will be the Mediterranean and the Near and Middle East, a true cradle of civilizations, religions, and exchange.
Instructor(s): G. Ferrario.

German Romance Languages Literatures
AS.210.163. Elementary Yiddish I. 3.0 Credits.
Year-long course. Includes the four language skills—reading, writing, listening, and speaking—and introduces students to Yiddish culture through text, song, and film. Emphasis is placed both on the acquisition of Yiddish as a tool for the study of Yiddish literature and Ashkenazi history and culture, and on the active use of the language in oral and written communication. Both semesters must be taken with a passing grade to receive credit. Recommended Course Background: AS.163 or equivalent, or permission of instructor.
Instructor(s): B. Lang

AS.210.164. Elementary Yiddish II. 3.0 Credits.
Year-long course that includes the four language skills—reading, writing, listening, and speaking—and introduces students to Yiddish culture through text, song, and film. Emphasis is placed both on the acquisition of Yiddish as a tool for the study of Yiddish literature and Ashkenazi history and culture, and on the active use of the language in oral and written communication. Both semesters must be taken with a passing grade to receive credit. Recommended Course Background: AS.210.163
Instructor(s): B. Lang

AS.210.263. Intermediate Yiddish I. 3.0 Credits.
This course will focus on the Yiddish language as a key to understanding the culture of Yiddish-speaking Jews. Topics in Yiddish literature, cultural history and contemporary culture will be explored through written and aural texts, and these primary sources will be used as a springboard for work on all the language skills: reading, writing, listening, and speaking. Prerequisites: AS.210.164 or equivalent, or permission of instructor.
Instructor(s): A. Dolinsky

AS.210.265. Individualized Yiddish Practicum. 3.0 Credits.
This course will allow students at any stage of Yiddish language acquisition to hone their skills in reading, writing, listening and speaking. The program will be individualized for each student according to his or her needs while at the same time providing joint activities in which all can participate.
Instructor(s): B. Lang

AS.210.386. Advanced Yiddish II. 3.0 Credits.
Continuation of Advanced Yiddish I (AS.210.386). Students will continue to hone their skills in all four language areas: reading, writing, listening, and speaking. In addition to advanced grammar study and readings in Yiddish literature, the course will take into account the interests of each individual student, allowing time for students to read Yiddish texts pertinent to their own research and writing.
Instructor(s): B. Lang

AS.210.387. Advanced Yiddish I. 3.0 Credits.
Year-long course. Includes the four language skills—reading, writing, listening, and speaking—and introduces students to Yiddish culture through text, song, and film. Emphasis is placed both on the acquisition of Yiddish as a tool for the study of Yiddish literature and Ashkenazi history and culture, and on the active use of the language in oral and written communication. Both semesters must be taken with a passing grade to receive credit. Recommended Course Background: AS.210.163 or permission of instructor.
Instructor(s): B. Lang
Area: Humanities.

AS.210.392. Yiddish Literature Literature. 3.0 Credits.
Year-long course. Includes the four language skills—reading, writing, listening, and speaking—and introduces students to Yiddish culture through text, song, and film. Emphasis is placed both on the acquisition of Yiddish as a tool for the study of Yiddish literature and Ashkenazi history and culture, and on the active use of the language in oral and written communication. Both semesters must be taken with a passing grade to receive credit. Recommended Course Background: AS.210.163
Instructor(s): B. Lang
Area: Humanities.
AS.210.370. Yiddish Texts II. 3.0 Credits.
Continuation of Yiddish Texts I. This course will give students who have completed Advanced Yiddish the chance to improve their proficiency. The curriculum will be determined according to the research interests of the students with an emphasis placed on reading primary texts fluently. Since the course is taught in Yiddish, students will also have ample opportunity to practice the other language skills (listening, speaking, writing). Recommended Course Background: Yiddish Texts I or permission of the instructor.
Instructor(s): B. Lang
Area: Humanities.

AS.211.202. Freshman Seminar: A Thousand Years of Jewish Culture. 3.0 Credits.
This course will introduce students to the history and culture of Ashkenazi Jews through their vernacular, Yiddish, from the settlement of Jews in German-speaking lands in medieval times to the present day. Particular emphasis will be placed on the responses of Yiddish-speaking Jews to the challenges posed by modernity to a traditional society. In addition to studying a wide range of texts—including fiction, poetry, memoir, song, and film—students will learn how to read the Yiddish alphabet, and will prepare a meal of traditional Ashkenazi dishes. No prior knowledge of Yiddish is necessary for this course.
Instructor(s): B. Lang
Area: Humanities.

AS.211.328. Berlin Between the Wars: Literature, Art, Music, Film. 3.0 Credits.
Explore the diverse culture of Berlin during the heyday of modernism. During the Weimar Republic, Berlin became a center for theater, visual arts, film, music, and literature that would have an outsize impact on culture throughout the world and the twentieth century. The thinkers, artists, and writers drawn to interwar Berlin produced a body of work that encapsulates many of the issues of the period: the effect of the modern city on society; “the New Woman”; socialist revolutionary politics; the rise of the Nazis; and economic turmoil. While learning about interwar Berlin’s cultural diversity, we will take a special look at works by Jewish writers and artists that engage with the question of ethnic, religious, and national identity in the modern world, specifically in the context of Berlin’s rich Jewish history and the rise of anti-Semitism in the interwar period. All readings will be in translation.
Instructor(s): S. Spinner
Area: Humanities.

AS.211.333. The Holocaust in Film and Literature. 3.0 Credits.
How has the Holocaust been represented in literature and film? Are there special challenges posed by genocide to the traditions of visual and literary representation? Where does the Holocaust fit in to the array of concerns that the visual arts and literature express? And where do art and literature fit in to the commemoration of communal tragedy and the working through of individual trauma entailed by thinking about and representing the Holocaust? These questions will guide our consideration of a range of texts — nonfiction, novels, poetry — in Yiddish, German, English, French and other languages (including works by Primo Levi and Isaac Bashevis Singer), as well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Steven Spielberg). All readings in English.
Prerequisites: Cannot be taken by anyone who previously took AS.213.361
Instructor(s): S. Spinner
Area: Humanities.

AS.211.348. Holocaust Consciousness — An Intercultural and Interdisciplinary Approach Through Media Studies and Psychology. 3.0 Credits.
This course approaches Holocaust consciousness in the U.S. and Europe within a psychological and media-theoretical frame-work. It is also part of a larger research project between the Center for Advanced Media Studies at JHU and the Sigmund Freud University in Vienna. During the semester students will be tele-conferencing during five to six class sessions with students in the same course held at the Sigmund Freud University and taught by Professors Nora Ruck and Markus Brunner. Together we will examine Holocaust consciousness in the U.S. and Europe, and such phenomena as trauma, inter-generational transmission, and projection of the trauma of the victims’ and/or the perpetrators’ As primary materials we will be using war memoirs and documentary films (from the films of the “Bilderverbot” to today’s family ethnographies). Students will be teamed in small, inter-cultural groups to address both U.S. and a European perspectives on these materials. An excursion to the U.S. Holocaust Memorial Museum in Washington D.C. will also be part of the course.
Instructor(s): B. Wegenstein
Area: Humanities
Writing Intensive.

AS.211.337. Wandering Jews? Jewish Migration in Film and Literature. 3.0 Credits.
Migration in all its forms has played a major role in shaping Jewish identity throughout history. From the Biblical exodus from Egypt through the beginnings of the diaspora under the Romans to the massive European Jewish immigration to America in the late 19th and early 20th centuries to the founding of the state of Israel, the migrations of Jews have also had a major place in Jewish literature. Going all the way back to the Bible, but focusing on the 20th century, this course will explore the ways in which literature and film represent the experience of migration, whether negative (compelled by expulsion or violence); positive (lured by economic or social opportunity); or somewhere in-between. We will examine poetry, plays, prose and film in Yiddish, German, Hebrew, and English (all in translation) on aspects of Jewish migration including the social and political factors motivating migration from the countryside to the shtetl (town) to the city and from Central and Eastern Europe to the Americas, Palestine, and Israel. Issues under discussion will include: adaptation and assimilation; minority rights; what is the relationship of old and new or major and minor languages and literatures?; what is the place of tradition and heritage in a diasporic context? We will also consider the resonances between contemporary debates on migration and historical examples of these issues as they are reflected in literature and film.
Instructor(s): S. Spinner
Area: Humanities
Writing Intensive.
AS.211.361. Narratives of Dissent in Israeli Society and Culture. 3.0 Credits.
In this course we will study and analyze the notion of dissent in Israeli society and culture on its various literary and artistic forms. We will examine the emergence and the formation of various political and social protest movements, such as the Israeli Black Panthers, Israeli feminism and the 2011 Social Justice protest. We will discuss at length the history and the nature of dissent in the military and in relation to Israeli wars and will track changes in these relations. Significant portion of the course will be dedicated to the literary, cinematic and artistic aspects of Israeli dissent and their influence on Israeli discourse. We will explore the nature and role of specific genres and media such as the Israeli satire, Israeli television, newspaper op-ed and the recent emergence of social media. Students wishing to work in English exclusively for 3 credits should enroll in section one. Students who are fluent in Hebrew and are wishing to attend an additional hour-long Hebrew discussion session per week with Professor Cohen (time TBD in consultation with enrolled students) for 4 credits should enroll in section two.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.

AS.211.480. Religious Themes in Film and Literature. 3.0 Credits.
This course would be of interest to anyone who would like to learn about the intersection of religion and modern culture. At the center of the course will stand a close study of the representation of religious themes and their role in modern literature and cinema. The works which we will deal with are not considered religious and yet they include religious themes as part of their narrative, images, language or symbolic meaning. We will trace in various works from various countries and genre, themes such as: divine justice, providence, creation, revelation, the apocalypse, prophecy, sacrifice and religious devotion. We will also study the ways in which Biblical and New Testament stories and figures are represented in these works. The course will have a comparative nature with the aim of learning more about the differences between the literary and cinematic representations.
Instructor(s): N. Stahl
Area: Humanities.

AS.211.754. Modernist Primitivism.
This course will explore the aesthetics and politics of primitivism in European modernity, focusing on the visual arts and literature in German and Yiddish, but looking at the wider European context, including France and Russia. We will begin with the backgrounds of primitivism in Romanticism, looking especially at its ethnographic and colonial sources. We will then focus on the presence of anthropological and ethnographic discourses within various registers of modernist thought, literature, and visual culture, with special attention to visual and literary primitivism. Our central concerns will include: the attempt to create a modernist aesthetics grounded in ethnography; the primitivist critique of modernity; the place of primitivism in the historical avant-garde; the development of the notion of “culture” in modernity; and the aesthetics of modern ethnic and national identity. &nbsp;Key thinkers, artists, and writers to be considered include Herder; Gauguin; Picasso; Wilhelm Worringer; Carl Einstein; Hannah Höch; and Emil Nolde.
Instructor(s): S. Spinner
Area: Humanities.

AS.212.432. The Dreyfus Affair: Lying for Truth. 3.0 Credits.
In 1894 French military captain Alfred Dreyfus was found guilty of a crime of treason he did not commit. The true reasons for his arrest are still under debate today: was this a sheer act of antisemitism? Why did the army create false proof against a men they knew was innocent? What was the role of the press in propagating the Affair? This course proposes to approach the Dreyfus Affair in all its complex forms, while encouraging students to carry out original and innovative research based on a wide range of resources (caricatures and articles in the press, pamphlets, paintings, films, music, photographs, court transcripts, government archives, private letters, and hopefully more).
Instructor(s): K. Cook-Gailloud
Area: Humanities.

AS.213.322. Museums and Jews, Jews in Museums. 3.0 Credits.
This course will examine the presence of Jews in museums. We will consider the history of the exhibition and collection of Jewish material culture in museums from the 19th century to the present day. Our main task will be to identify the various museological traditions that engage Jewish identity, including the collection of art and antiques, ethnographic exhibitions, history museums, and Holocaust museums. Some of the questions we will ask include: how do museums shape identity? what is the relationship between the scholarly premises of many museums and their popular reception? and, centrally, what is the relationship between Jewish museums and museums of the Holocaust?
Instructor(s): S. Spinner
Area: Humanities.

AS.213.324. What is Jewish Culture?. 3.0 Credits.
We talk about Jewish literature, music, and art—but can a book, or a song, or a painting be Jewish? We will examine the premises of this question and the many answers that have been formulated in response to it focusing on modern European (and some American) culture. Jewishness as it relates to human identity has been conceived of as related to religion, ethnicity, race, nation, language, geography, and politics. But these keywords have also been used to engage with the question of the Jewish identity not of a person, but of a cultural product. To understand the implications of calling, say, a book Jewish, we will examine the history of the concept of culture and its emergence in the context of the formation of modern Jewish identity. We will examine theoretical and literary texts originally written in German, Yiddish, Hebrew, and English, as well as painting, photography, film, and architecture from Europe, Israel and the Americas. We will aim to arrive at an understanding of the ways that the idea of culture intersects with the formation of Jewish identity in modernity. All readings will be in English.
Instructor(s): S. Spinner
Area: Humanities.

AS.213.334. Kafka. 3.0 Credits.
Franz Kafka is one of the most important — and one of the most challenging — writers of the twentieth century. This course will investigate why both are true. We will analyze a wide range of his works and learn "how" to read Kafka. We will become familiar with his characteristic subjects: law; family; power; institutions; modernity. We will also attempt to become familiar with his characteristic forms and styles and attempt, in the process, to find out what makes Kafka "kafkaesque." We will also consider his impact on art, literature, film, and thought from his time to the present. All readings in English. German majors/minors should enroll in section 02.
Instructor(s): S. Spinner
Area: Humanities.
AS.213.348. Picturing Jews: Representing Jewish Identity in Modern Art, Film & Literature. 3.0 Credits.

This course will consider the different ways Jewish identity has been represented in the 19th and 20th centuries, focusing primarily on Central and Eastern Europe. Race, nationalism, religion, language, geography, politics—all helped shape different ways of understanding just what it meant to be a Jew, and all found expression in art and literature by both Jews and non-Jews. Looking at texts originally written in German, Yiddish, and Hebrew, including prose, poetry, journalism and drama, as well as painting, photography, graphic design, architecture, and film we will gain an understanding of the range of ways that Jewish identity could be understood and expressed as well as of the ideological stakes and historical contexts of such representations. Writers and artists examined will include Chagall, Kafka, Sholem Aleichem, and Bialik. All readings will be in translation.

Instructor(s): S. Spinner
Area: Humanities.

AS.213.383. Jewish Travel Literature. 3.0 Credits.

Exile; Diaspora; Wanderer; Refugee, Immigrant—these are all keywords that have been closely associated with Jews and the Jewish experience. What binds them all is movement, whether individual or communal, voluntary or involuntary. This course will examine the connection between movement and Jewish culture and history through the various forms of Jewish travel writing. In looking at depictions of travel both fictional and historical from the Middle Ages to the 20th century we will revisit and interrogate many of these keywords to understand the ways they have been deployed to understand Jewish identity in literature and beyond. A central point of consideration will be the role of travel in shaping conceptions of Jewish identity as well as Jewish literature in the modern period. We will examine novels, short stories, reportage, and travelogues describing real and imagined journeys from and to Asia, the Middle East, Europe, and America. All readings will be in English translation, primarily from sources in Yiddish, Hebrew, and German.

Instructor(s): S. Spinner
Area: Humanities.

AS.213.387. Major City, Minor Literature? Berlin in German-Jewish and Yiddish Literature. 3.0 Credits.

Between the two World Wars, a period of intense artistic and intellectual vitality, Berlin was an international center for theater, visual arts, and literature. Many important Yiddish-language writers were drawn to Berlin and, together with their German-language counterparts, produced a body of literature that explores issues of modernity and identity. By comparing works in Yiddish and German, we will learn about inter-War Berlin's cultural diversity and richness, while also gaining insight into the particular issues of writing about Jewish identity in the 1920s, and the implications of writing in a minor language (Yiddish). We will read works by authors including Joseph Roth and Alfred Döblin in German, and Moyshe Kulbak and David Berelson in Yiddish. All texts will be in translation. Some questions we will explore include: • What is a minority/ minor language or literature? • How did German and Yiddish interact in cultural and social spheres? • Can texts in different languages comprise a single body of literature? • What did it mean to be German and what did it mean to be Jewish? • Are assimilation and hybridity useful concepts? • Is there such a thing as Jewish modernism? • How did literature of the period respond to the rise of the Nazi party and the intensification of antisemitism?

Instructor(s): S. Spinner
Area: Humanities.

AS.213.407. Museums and Identity. 3.0 Credits.

This course will explore the phenomenon of the “identity” museum through case studies involving Jewish and Holocaust museums around the world. The museum boom of the last half-century has centered in large part around museums dedicated to the culture and history of particular minority groups; recent notable (and relatively local) examples include the brand new National Museum of African American History and Culture in Washington and the National Museum of American Jewish History in Philadelphia. Our understanding of the contemporary theory and practice of such museums will be based on an examination of the history of the various museological traditions that engage Jewish identity from the 19th century to the present, including the collection and display of art and antiquities, ethnographic exhibitions, history museums, and Holocaust museums. We will deal with two primary museological phenomena: first, the introduction of the “primitive other” into European modernity via ethnographic museums; second, the museological commemoration and representation of trauma, specifically of the Holocaust. We will explore these topics through historical documents, theoretical readings, and case studies including visits to nearby museums. All readings in English.

Instructor(s): S. Spinner
Area: Humanities.

AS.213.635. Anthropology and Modernism.

This course will examine the reciprocal relationship between modernism and anthropology in Western and Central Europe, including examples from French, German, and Yiddish contexts. We will focus on the presence of anthropological and ethnographic discourses within various registers of modernist thought, literature, and visual culture, with special attention to visual and literary primitivism. We will also consider attempts by ethnographers to shape their practice in a modernist mold. Our central concerns will include the attempt to create a modernist poetics grounded in ethnography and the relationship between anthropological theory and ethnographic praxis in the modernist understanding of “culture.”

Instructor(s): S. Spinner
Area: Humanities.

AS.216.300. Contemporary Israeli Poetry. 3.0 Credits.

This course examines the works of major Israeli poets such as Yehuda Amichai, Nathan Zach, Dalia Rabikovitch, Erez Biton, Roni Somek, Dan Pagis, Yona Wollach, Yair Horwitz, Maya Bejerano, and Yitzhak Laor. Against the background of the poetry of these famous poets we will study recent developments and trends in Israeli poetry, including less known figures such as Mois Benarroch, Shva Salhoov and Almog Behar. Through close reading of the poems, the course will trace the unique style and aesthetic of each poet, and will aim at presenting a wide picture of contemporary Hebrew poetry.

Prerequisites: Students may receive credit for AS.216.300 or AS.300.413, but not both.

Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.

AS.216.307. Reflective Mirrors: Israeli and Palestinian Cinema. 3.0 Credits.

Palestinian and Israeli cinemas have emerged side by side, each depicting its Other as a deceiving mirror of its own self. This course will analyze the different images of these Others in both cinemas.

Instructor(s): N. Stahl; Z. Cohen
Area: Humanities
Writing Intensive.
AS.216.342. The Holocaust in Israeli Society and Culture. 3.0 Credits.
This course examines the role of the Holocaust in Israeli society and culture. We will study the emergence of the discourse of the Holocaust in Israel and its development throughout the years. Through focusing on literary, artistic and cinematic responses to the Holocaust, we will analyze the impact of its memory on the nation, its politics and its self-perception.
Instructor(s): N. Stahl
Area: Humanities
Writing Intensive.

AS.216.370. Israel Through Prose. 3.0 Credits.
This course examines representations of various aspects of Israeli society and culture in contemporary Israeli prose. The course will follow both a thematic and chronological path in order to study the ways in which Israeli prose reflects political, ideological, social and cultural aspects of contemporary Israel. In this context, we will read works by several major authors such as: Agnon, Shabtai, Kahanah-Carmon, Oz, Kenaz, Yehoshua, Grossman, Castel-Bloom, Matalon, Laor, Kashua and Hoffmann. Students who sign up for section 2 will work an additional hour in Hebrew with Professor Cohen at a time mutually agreed upon by the professor and the students enrolled.-Carmon, Oz, Kenaz, Yehoshua, Grossman, Castel-Bloom, Matalon, Laor, Kashua and Hoffmann.
Instructor(s): N. Stahl, Z. Cohen
Area: Humanities
Writing Intensive.

AS.216.373. War in Israeli Arts and Culture. 3.0 Credits.
In this course we will study the various representations of what functions as one of Israel's most unifying and yet dividing forces: war. By analyzing literary and cinematic works as well as visual art and popular culture we will attempt to understand the role of war in shaping Israeli society, culture and politics. Topics such as commemoration and mourning, heroism, dissent and protest, trauma and memory and the changing image of the soldier will stand at the center of the course.
Instructor(s): N. Stahl, Z. Cohen
Area: Humanities

AS.216.398. Zionism: Literature, Film, Thought. 3.0 Credits.
This course studies the relations between modern Hebrew and Israeli culture and Zionism. Based on a close reading of both literary and non-literary Zionist texts, we will explore the thematic, social and political aspects of the Zionist movement. The course focuses on primary sources and its main goal is to familiarize students with the various ways in which Zionism was formed and understood. In the last part of the semester we will investigate the different meanings of Post-Zionist through contemporary literary and non-literary texts as well as recent Israeli films.
Instructor(s): N. Stahl, Z. Cohen
Area: Humanities

AS.216.412. The Divine in Literature and Cinema. 3.0 Credits.
This course studies various issues concerning literary and cinematic representations of the divine. We will investigate theoretical, theological, generic and aesthetic aspects of the topic and will familiarize ourselves with the general problem of the relation between religion, literature and cinema. Among the topics to be discussed are, negative theology in literature and film, theodicy and anti-theodicy, the question of religion and literary modernism, providence and narratology in the modern novel and in contemporary cinema.
Instructor(s): N. Stahl.

AS.216.444. The Apocalypse in Literature and Film. 3.0 Credits.
"Everything which we loved is lost! We are in a desert" – this emotional assertion was the reaction to Kazimir Malevich's 1915 painting The Black Square, as the artist himself recalled it. This sentiment of fearing, warning and even witnessing the end of the world as we know it, will stand at the center of the course. We will study the literary and cinematic representations of this apocalyptic notion and investigate its theoretical, theological, physiological and aesthetic aspects. We will seek to trace the narrative dynamics as well as literary and cinematic means of apocalyptic representations in works from various periods, languages, cultures and religions. Among the issues to be discussed: what is the apocalypse, biblical apocalypse, dystopia and nostalgia, trauma and post trauma, war and the apocalypse, the Holocaust as the end of civilization, the atomic bomb, realism and anti-realism, political changes and the apocalypse in popular culture.
Instructor(s): N. Stahl
Area: Humanities
Writing Intensive.

AS.216.500. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): N. Stahl.

AS.216.800. Independent Study.
Instructor(s): N. Stahl.

Center for Language Education
AS.384.115. First Year Hebrew. 4.0 Credits.
Designed to provide reading and writing mastery, to provide a foundation in Hebrew grammar and to provide basic conversational skills. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students' schedules.
Instructor(s): Z. Cohen.

AS.384.116. First Year Hebrew II. 3.0 Credits.
Designed to provide reading and writing mastery, to provide a foundation in Hebrew grammar and to provide basic conversational skills. Cross-listed with Jewish Studies.
Prerequisites: AS.384.115
Instructor(s): Z. Cohen.
Area: Humanities.

AS.384.215. Second Year Hebrew. 3.5 Credits.
Designed to enrich vocabulary and provide intensive grammatical review, and enhance fluency in reading, writing and comprehension. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students' schedules.
Prerequisites: AS.384.116 or equivalent.
Instructor(s): Z. Cohen.
Area: Humanities.

AS.384.216. Second Year Hebrew II. 3.0 Credits.
Designed to enrich vocabulary and provide intensive grammatical review, and enhance fluency in reading, writing and comprehension. Recommended Course Background: AS.384.215 or permission required.
Prerequisites: AS.384.215
Instructor(s): Z. Cohen.
Area: Humanities.

AS.384.315. Third Year Hebrew. 4.0 Credits.
Designed to maximize comprehension and the spoken language through literary and newspaper excerpts providing the student with the language of an educated Israeli. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students' schedules.
Prerequisites: AS.384.216 or equivalent.
Instructor(s): Z. Cohen
Area: Humanities.
AS.384.316. Third Year Hebrew II. 3.0 Credits.
Designed to: maximize comprehension and the spoken language through literary and newspaper excerpts providing the student with the language of an educated Israeli. Recommended Course Background: AS.384.315 or permission required. Cross-listed with Jewish Studies.
Prerequisites: AS.384.315 or instructor permission
Instructor(s): Z. Cohen
Area: Humanities.

Center for Language Education

http://krieger.jhu.edu/cle

The Center for Language Education (CLE) was established in 1992 and presently offers foreign-language courses in Arabic, Chinese, Hebrew, Hindi, Japanese, Korean, and Russian.

The CLE also offers, non-credit English as a Second Language (ESL) courses, English for International Teaching Assistants (ITAs), and a Summer Intensive English Language Program for visiting and pre-college students. The Summer Program consists of classes in Oral Communication, Academic and Professional Writing, Accent Reduction, American Culture, and Grammar/TOEFL Preparation.

Grading and Course Progression for Languages Offered by the Center for Language Education

CLE language classes may be taken satisfactory/unsatisfactory only at the intermediate level and above. A student earning a D in a course is not eligible to pass to the next higher level course. Students are granted credit for each semester course successfully completed, regardless of enrollment or performance in a subsequent course.

For current faculty and contact information go to http://krieger.jhu.edu/cle/people/

Faculty

Director
Yuki Johnson
Teaching Professor. Japanese.

Lecturers
Aiguo Chen
Lecturer: Chinese.

Zvi Cohen
Lecturer: Hebrew.

Iryna Hniadzko
Lecturer: Russian.

Sana Jafire
Lecturer: Arabic.

SaharMasriJendi
Lecturer: Arabic.

Satoko Katagiri
Lecturer: Japanese.

Soo Yun Lee
Lecturer: Korean

Makiko Nakao
Lecturer: Japanese.

Uma Saini
Sr. Lecturer: Hindi.

Ying Sun
Lecturer: Chinese.

Julia Yarmolinskaya
Lecturer: ESL

Lu Yin
Lecturer: Chinese.

Nan Zhao
Lecturer: Chinese.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.370.010. Listening & Speaking - Advanced Beginner.
This course will be an in-depth study of higher level English grammar. Students will build on their foundational grammar skills, gain confidence in the more subtle nuances of grammar. Sentence structure will be studied at length giving the ability to more clearly express their ideas. Other focus areas will include but are not limited to, the perfect tenses, higher level punctuation, and modal verbs.
Instructor(s): Staff.

AS.370.020. Listening & Speaking.
Instructor(s): D. McNeal
Area: Humanities.

AS.370.022. Reading & Writing English.
Instructor(s): A. Leone-Pizzighella
Writing Intensive.

AS.370.030. Listening & Speaking.
Instructor(s): S. Lee.

AS.370.032. Reading & Writing English.
Instructor(s): A. Leone-Pizzighella
Writing Intensive.

AS.370.034. American Culture.
Instructor(s): D. McNeal
Writing Intensive.

AS.370.040. Listening & Speaking.
Instructor(s): M. Walsh.

AS.370.042. Reading & Writing English.
Instructor(s): M. Walsh
Writing Intensive.

AS.370.044. Accent Reduction.
In person registration only This course is designed to help non-native American English speakers tackle American English language skills and improve their pronunciation and manner of speaking dramatically. The course incorporates the learning of language skills such as the sounds, stress patterns, rhythm, and intonation patterns of American English. This is a separate process from learning the grammar and vocabulary of American English. The completion of this course will result in accent modification, accent improvement and easily understandable conversational speech and will help the learner to function more effectively at work and outside of work.
Instructor(s): A. Leone-Pizzighella.
AS.370.050. Strengthening English for the TOEFL.
This course will be an in-depth study of higher level English grammar. Students will build on their foundational grammar skills, gaining confidence in the more subtle nuances of grammar. Sentence structure will be studied at length giving students the ability to more clearly express their ideas. Other focus areas will include but are not limited to, the perfect tenses, higher level punctuation, and modal verbs. Instructor(s): M. Walsh.

Description: This course will be an in-depth study of higher level English grammar. Students will build on their foundational grammar skills, gaining confidence in the more subtle nuances of grammar. Sentence structure will be studied at length giving students the ability to more clearly express their ideas. Other focus areas will include but are not limited to, the perfect tenses, higher level punctuation, and modal verbs. Instructor(s): E. Dunn.

AS.370.062. Accent Reduction for ITAs.
This course is intended for international Teaching Assistants (TAs) who are not native speakers of English. It focuses on improving students’ perception and pronunciation of American English through learning articulation, phonetics, and phonology. Students learn the basics of anatomy of speech production in order to understand how difficult sounds and sound contrasts are made. Students also learn the International Phonetic Alphabet (IPA) to help them distinguish sound contrasts that are difficult depending on the individual students’ native languages. Moving beyond individual sounds, students learn how sounds change depending on what word or phrase they appear in and when they appear in fast or colloquial speech. Finally, students learn and practice intonation appropriate for various types of statements and questions. Instructor(s): J. Yarmolinskaya.

This course is intended for international Teaching Assistants (TAs) who are not well acquainted with the culture of American universities. It focuses on improving students’ understanding of the culture and communication norms in American academia. Students learn the basics of conversation and e-mail etiquette in America, as well as the norms of interacting with college students they teach, professors, and colleagues in situations such as classes, office hours, lab meetings, and scientific meetings. Students practice designing and presenting lectures, supporting materials, tests, and assignments for classes they TA, as well as scholarly presentations of their research to the scientific community. This course is open only to graduate students in AS/EN. Instructor(s): J. Yarmolinskaya.

AS.370.064. Academic Writing and Grammar.
This course is intended for international teaching assistants, graduate students and postdoctoral fellows who are not native speakers of English. Students will read and analyze the content, structure, and style of a wide range of academic and professional writing in order to improve their own essays, articles, reports, theses, critiques, and proposals using those features. They will learn to explain, support, compare and argue their ideas effectively through attention to organization, vocabulary, and style. Grammar will be infused into the course as it applies to revision and editing of written work and consistency within various types of writing. Students will use a variety of strategies to improve skills in idea development, organization, word choice, sentence fluency, voice, grammar and mechanics. Writing tasks will be integrated with content, vocabulary, and grammar from various texts. Instructor(s): J. Yarmolinskaya.

This course is intended for international teaching assistants, graduate students and postdoctoral fellows who are not native speakers of English. This course aims to enable students to succeed in academic, professional, and social discussions and conversations. By focusing on strategies for initiating oral communication, responding to the comments and ideas of others; as well as improving listening skills, students will become better overall at speaking and listening to English. Fiction and non-fiction media from a variety of sources will be used to stimulate discussion, sharpen listening skills, and build vocabulary. Exercises and drills will target specific grammar trouble spots and explicit pronunciation errors. So as to empower students in formal speaking situations, they will be asked to deliver two short 2-4 minute presentations and one longer 5-8 minute presentation. Extensive practice and feedback from instructor and classmates encourage students’ confidence in their public speaking skills. Instructor(s): D. McNeal.

AS.370.066. Public Speaking and Presentations.
This course aims to enable English language learning students to succeed in professional and social discussions and conversations by honing their public speaking skills. This course will focus on strategies for creating, delivering and observing a variety of presentations. Exercises and drills will target specific grammar trouble spots and explicit pronunciation errors. Material will augmented so as to empower students in formal and social speaking situations. Students will be asked to deliver seven short 3-5 minute presentations and one longer 5-8 minute presentation. Extensive practice and feedback from the instructor and classmates will encourage students’ confidence in their public speaking skills. At the end of this course, it is expected that students will be able to deliver cogent and engaging presentations as well be able to provide insightful and educated feedback on others’ presentations. Instructor(s): D. McNeal.

AS.370.111. First Year Heritage Chinese. 3.5 Credits.
This course is designed for students who were raised in an environment in which Chinese is spoken by parents or guardians at home and for those who are familiar with the language and possess native-like abilities in comprehension and speaking. The course therefore focuses on reading and writing (including the correct use of grammar). Cross-listed with East Asian Studies. Instructor(s): N. Zhao; R. Hsieh.

AS.370.112. First Year Heritage Chinese II. 3.0 Credits.
For students who have significant previously-acquired ability to understand and speak Modern Standard Chinese. Course focuses on reading and writing. Teaching materials are the same as used in AS.373.115-116; however, both traditional and simplified versions of written Chinese characters are used. Lab required. Continuation of AS.373.111. Recommended Course Background: AS.373.111 or permission required.
Prerequisites: AS.373.111 or instructor permission. Instructor(s): N. Zhao.
AS.373.115. First Year Chinese. 4.5 Credits.
This course is designed primarily for students who have no prior
exposure to Chinese. The objective of the course is to help students build
a solid foundation of the four basic skills—listening, speaking, reading,
and writing in an interactive and communicative learning environment.
The emphasis is on correct pronunciation, accurate tones and mastery of
basic grammatical structures. Note: Students with existing demonstrable
skills in spoken Chinese should take AS.373.111-112. No Satisfactory/
Unsatisfactory. Students may choose to attend either lecture at 12pm or
3pm on TTh. Cross-listed with East Asian Studies
Instructor(s): J. Chen; N. Zhao; Y. Chen.

AS.373.116. First Year Chinese II. 4.5 Credits.
Introductory course in Modern Standard Chinese. Goals: mastery of
elements of pronunciation and control of basic vocabulary of 800-900
words and most basic grammatical patterns. Students work first with Pin-
Yin system, then with simplified version of written Chinese characters.
Continuation of AS.373.115. Note: Student with existing demonstrable
skills in spoken Chinese should take AS.373.111-112. Recommended
Course Background: AS.373.115 or permission required.
Prerequisites: AS.373.115 or instructor permission
Instructor(s): J. Chen; L. Yin; N. Zhao; Y. Chiang.

AS.373.211. Second Year Heritage Chinese. 3.5 Credits.
This course is designed for students who finished AS.373.112 with C+ and
above (or equivalent). Students in this course possess native-like
abilities in comprehension and speaking. The course focuses on reading
and writing. Cross-listed with East Asian Studies
Prerequisites: AS.373.112 or equivalent.
Instructor(s): A. Chen
Area: Humanities.

AS.373.212. Second Year Heritage Chinese II. 3.0 Credits.
For students who have significant previously-acquired ability to
understand and speak Modern Standard Chinese. Course focuses on
reading and writing. Teaching materials are the same as used in
AS.373.115-116; however, both traditional and simplified versions of
written Chinese characters are used. Continuation of AS.373.211.
Recommended Course Background: AS.373.211 or permission required.
Prerequisites: AS.373.211 or instructor permission
Instructor(s): A. Chen
Area: Humanities.

AS.373.215. Second Year Chinese. 4.5 Credits.
Consolidation of the foundation that students have laid in their
first year of study and continued drill and practice in the spoken
language, with continued expansion of reading and writing vocabulary
and sentence patterns. Students will work with both simplified and
traditional characters. Note: Students who have native-like abilities in
comprehension and speaking should take AS.373.211-212. Cross-listed
with East Asian Studies
Prerequisites: AS.373.116 or equivalent.
Instructor(s): A. Chen; L. Yin
Area: Humanities.

AS.373.216. Second Year Chinese II. 4.5 Credits.
Consolidation of the foundation that students have laid in their
first year of study and continued drill and practice in the spoken
language, with continued expansion of reading and writing vocabulary
and sentence patterns. Students will work with both simplified and
traditional characters. Note: Students who have native-like abilities in
comprehension and speaking should take AS.373.211-212. Recommended
Course Background: AS.373.215 or Permission Required.
Cross-listed with East Asian Studies
Prerequisites: AS.373.215 or instructor permission.
Instructor(s): A. Chen; J. Yin
Area: Humanities.

AS.373.261. Intermediate Workshop & Practicum in Engineering Chinese. 2.0 Credits.
JHU China-STEM Program: Engineering: Specialized intermediate
language instruction for students of Mandarin in fields of science and
engineering. Courses offered at the Nanning Center in Nanjing, China.
By application only. Two years of College-level Mandarin required for
admission to the China-STEM Program.
Instructor(s): N. Yu
Area: Humanities.

AS.373.271. Intermediate Workshop and Practicum in Health Sciences Chinese. 2.0 Credits.
JHU China-STEM Program: Engineering: Specialized intermediate
language instruction for students of Mandarin in fields of science and
engineering. Courses offered at the Nanning Center in Nanjing, China.
By application only. Two years of College-level Mandarin required for
admission to the China-STEM Program.
Instructor(s): N. Yu
Area: Humanities.

AS.373.313. Third Year Heritage Chinese. 3.0 Credits.
This course is designed primarily for students who have no prior
knowledge of grammar and vocabulary and further develops reading
ability through work with textbook material and selected modern essays
and short stories. Class discussions will be in Chinese insofar as feasible
and written assignments will be given. Cross-listed with East Asian Studies
Prerequisites: Prereq: AS.373.211 AND AS.373.212 or instructor's
permission
Instructor(s): L. Yin
Area: Humanities.

AS.373.314. Third Year Heritage Chinese II. 3.0 Credits.
This course is a continuation of AS.373.313. Students need to have native-level fluency in speaking and understanding Chinese. The course focuses on reading and writing. In addition to the textbooks, downloaded articles on current affairs may also be introduced on a regular basis. Cross-listed with East Asian Studies
Prerequisites: Prerequisites: AS.373.313 or equivalent
Instructor(s): J. Yin
Area: Humanities.

AS.373.315. Third Year Chinese. 3.5 Credits.
This two-semester course consolidates and further expands students’
knowledge of grammar and vocabulary and further develops reading
ability through work with textbook material and selected modern essays
and short stories. Class discussions will be in Chinese insofar as feasible
and written assignments will be given. Cross-listed with East Asian Studies
Prerequisites: AS.373.216 or instructor permission
Instructor(s): A. Chen
Area: Humanities.
AS.373.316. Third Year Chinese II. 3.5 Credits.
This two-semester course consolidates and further expands students’ knowledge of grammar and vocabulary and further develops reading ability through work with textbook material and selected modern essays and short stories. Class discussions will be in Chinese insofar as feasible, and written assignments will be given. Continuation of AS.373.315. Recommended Course Background: AS.373.315 or permission required. **Prerequisites:** AS.373.315 or instructor permission  
**Instructor(s):** A. Chen  
**Area:** Humanities.

AS.373.361. Chinese for Engineers. 6.0 Credits.
JHU China-STEM Program: Engineering: Specialized intermediate language instruction for students of Mandarin in fields of science and engineering. Courses offered at the Nanging Center in Nanjing, China. By application only. Two years of College-level Mandarin required for admission to the China-STEM Program.  
**Instructor(s):** N. Yu  
**Area:** Humanities.

AS.373.416. Fourth Year Chinese II. 3.0 Credits.
Continuation of AS.373.415. Readings in modern Chinese prose, including outstanding examples of literature, newspaper articles, etc. Students should understand most of the readings with the aid of a dictionary, so that class discussion need not focus primarily on detailed explanations of grammar. Discussion, to be conducted in Chinese, will concentrate on the cultural significance of the readings’ content. Recommended Course Background: AS.373.415 or Permission Required. Cross-listed with East Asian Studies  
**Prerequisites:** AS.373.415 or instructor permission  
**Instructor(s):** L. Yin  
**Area:** Humanities.

AS.373.451. Topics in Chinese Media. 3.0 Credits.
The main focus of this course is to expand the student’s knowledge of four essential skills in Chinese language and to deepen the student’s knowledge of Chinese culture. The course is taught based on various written and visual materials (including newspapers, journals, TV, movies, and short novels) to improve students’ reading comprehension, maintain conversation skills through class discussion, increase understanding of the culture and society of China, and enhance writing ability through short compositions and a writing project. Recommended Course Background: Completion of four years of Chinese language or permission required.  
**Instructor(s):** N. Zhao  
**Area:** Humanities.

AS.373.491. 5th Year Chinese. 3.0 Credits.
Fifth Year Chinese is designed for students who finished fourth year regular or third year heritage Chinese course at JHU or its equivalent and wish to achieve a higher advanced proficiency level in Chinese. The goal of the course is to help students further develop their listening, speaking, reading and writing skills cohesively and to enhance students’ understanding of Chinese culture and society through language learning.  
**Prerequisites:** AS.373.416 or AS.373.314 or equivalent  
**Instructor(s):** N. Zhao.

AS.373.492. Fifth Year Chinese. 3.0 Credits.
Fifth Year Chinese is designed for students who finished fourth year regular or third year heritage Chinese course at JHU or its equivalent and wish to achieve a higher advanced proficiency level in Chinese. The goal of the course is to help students further develop their listening, speaking, reading and writing skills cohesively and to enhance students’ understanding of Chinese culture and society through language learning.  
**Prerequisites:** AS.373.491 or equivalent  
**Instructor(s):** N. Zhao.

AS.373.501. Independent Study - Chinese. 0.0 - 4.0 Credits.  
**Instructor(s):** L. Lievens; M. Johnson; N. Zhao.

AS.373.502. Independent Study - Chinese. 2.0 Credits.  
**Instructor(s):** L. Lievens; M. Johnson.

AS.375.115. First Year Arabic. 4.5 Credits.
Introductory course in speaking, listening, reading, and writing Modern Standard Arabic. Presents basic grammatical structures and a basic vocabulary. Through oral-aural drill in classroom, tapes in Language Laboratory, and reading/writing exercises, students attain a basic level of competence on which they can build in subsequent years of study No Satisfactory/ Unsatisfactory  
**Instructor(s):** S. Jafire.
AS.375.116. First Year Arabic II. 4.5 Credits.
Continuation of AS.375.115. Introductory course in speaking, listening, reading, and writing Modern Standard Arabic. Presents basic grammatical structures and a basic vocabulary. Through oral-aural drill in classroom, tapes in Language Laboratory, and reading/writing exercises, students attain a basic level of competence on which they can build in subsequent years of study. Accelerated students should register for Section 01. May not be taken Satisfactory/ Unsatisfactory
Prerequisites: AS.375.115 or instructor permission
Instructor(s): F. Abdallah; I. Hassan; K. Tahrawi; S. Jafire.

AS.375.119. Beginning Arabic I. 3.0 Credits.
Introductory course in speaking, listening, reading, and writing Modern Standard Arabic. Presents basic grammatical structures and a basic vocabulary. Through oral-aural drill in classroom, tapes in Language Laboratory, and reading/writing exercises, students attain a basic level of competence on which they can build in subsequent years of study.
Instructor(s): F. Abdallah; K. Tahrawi.

AS.375.120. Beginning Arabic II. 3.0 Credits.
Continuation of Beginning Arabic I. Introductory course in speaking, listening, reading, and writing Modern Standard Arabic. Presents basic grammatical structures and a basic vocabulary. Through oral-aural drill in classroom, tapes in Language Laboratory, and reading/writing exercises, students attain a basic level of competence on which they can build in subsequent years of study.
Instructor(s): K. Tahrawi.

AS.375.215. Second Year Arabic. 4.0 Credits.
Designed to bring students up to competency level required for third/fourth year Arabic. Students will consolidate and expand their mastery of the four basic skills acquired in AS.375.115-116. More authentic material--written, audio, and visual--will be used, and culture will be further expanded on as a fifth skill. Recommended Course Background: AS.375.115-116 or equivalent.
Prerequisites: AS.375.116 or equivalent.
Instructor(s): Staff
Area: Humanities.

AS.375.216. Second Year Arabic II. 4.0 Credits.
Continuation of AS.375.215. Designed to bring students up to competency level required for third/fourth year Arabic. Students will consolidate and expand their mastery of the four basic skills acquired in AS.375.115-116. More authentic material--written, audio, and visual--will be used, and culture will be further expanded on as a fifth skill. Accelerated students should register for Section 01. Recommended Course Background: AS.375.215 or permission required.
Prerequisites: AS.375.215 or instructor permission
Instructor(s): I. Hassan; S. Jafire
Area: Humanities.

AS.375.301. Third Year Arabic. 3.0 Credits.
Designed to enhance students' ability to read, discuss, and write about various topics covered in traditional and contemporary Arabic texts. Recommended Course Background: AS.375.216 or equivalent.
Prerequisites: AS.375.116 or instructor permission
Instructor(s): S. Jafire
Area: Humanities.

AS.375.302. Third Year Arabic II. 3.0 Credits.
Designed to enhance students' ability to read, discuss, and write about various topics covered in traditional and contemporary Arabic texts. Continuation of AS.375.301. Recommended Course Background: AS.375.301 or permission required.
Prerequisites: AS.375.301 or instructor permission
Instructor(s): S. Jafire
Area: Humanities.

AS.375.401. Fourth Year Arabic. 2.0 Credits.
This is an introductory course to different periods of the Arabic literature. Selections of famous Arabic poetry and short prose works are the substance of the course.
Prerequisites: AS.375.302 or equivalent.
Instructor(s): Staff
Area: Humanities.

AS.375.402. Fourth Year Arabic II. 2.0 Credits.
This is an introductory course to different periods of the Arabic literature. Selections of famous Arabic poetry and short prose works are the substance of the course. Continuation of AS.375.401. Recommended Course Background: AS.375.302 or equivalent.
Prerequisites: AS.375.401 or equivalent.
Instructor(s): F. Ismail
Area: Humanities.

AS.375.501. Independent Study--Arabic. 0.0 - 3.0 Credits.
Instructor(s): M. Johnson.

AS.375.801. Independent Study - Arabic.
Graduate level Independent Study course in Arabic.
Instructor(s): B. Rajab.

AS.375.802. Independent Study -- Arabic.
Instructor(s): B. Rajab
Area: Humanities.

AS.377.115. First Year Russian. 4.0 Credits.
This course is designed for students who have no background in the language and wish to learn the language at an academic level, obtaining knowledge of the linguistic aspects of the language as well as skills needed to communicate in Russian. The goal of the course is the simultaneous progression of four skills (speaking, listening, writing, and reading) as well as familiarity with aspects of Russian linguistics and culture that are necessary for language competency in survival level. It is expected that, by the end of the spring term, students will have basic speaking and listening comprehension skills, a solid grasp of basic grammar, reading and writing skills. No Satisfactory/Unsatisfactory.
Prerequisites: Students may not have completed AS.377.131 AND AS.377.132 under the previous JHU/Goucher program.
Instructor(s): Staff.

AS.377.131. Elements of Russian I. 4.0 Credits.
Designed to give student a firm foundation in the language, with special emphasis on the development of vocabulary, basic reading, and conversational skills. (Section 02 taught at Goucher College)
Instructor(s): A. Czeczulin; O. Samilenko.

AS.377.132. Elementary Russian II. 4.0 Credits.
Designed to give students a firm foundation in the language, with special emphasis on the development of vocabulary, basic reading, and conversational skills. Continuation of AS.377.131. Section 02 taught at Goucher. May not be taken Satisfactory/Unsatisfactory. Recommended Course Background: AS.377.131.
Instructor(s): A. Czeczulin; O. Samilenko.
AS.377.200. Say What You Mean, Mean What You Say. 3.0 Credits.
This course focuses on language as a form of communication – verbal, nonverbal and written. It is designed to prepare students to study their own language(s) as well as foreign languages such as Russian, relying on physical cues, common grammar, and the global need to express oneself to others, by taking a hard look at the mechanics of creating an entertainment sensation. Taught at Goucher College.
Instructor(s): A. Czeczulin
Area: Humanities.

AS.377.208. Intensive Intermediate Russian. 4.0 Credits.
Intensive oral work; continued emphasis on grammar and reading comprehension. Section 02 taught at Goucher College.
Prerequisites: AS.377.132 or instructor permission
Instructor(s): A. Czeczulin
Area: Humanities.

AS.377.209. Advanced Russian Grammar. 4.0 Credits.
Continuation of AS.377.208. Intensive oral work; continued emphasis on grammar and reading comprehension.
Instructor(s): A. Czeczulin
Area: Humanities.

AS.377.210. Speak Russian. 3.0 Credits.
Discussions based on readings, films, and multimedia exercises. Special attention is paid to the active use of grammar structures in fourth semester Russian. Recommended Course Background: AS.377.209 or instructor's permission.
Prerequisites: AS.377.209 or instructor permission
Instructor(s): O. Samilenko
Area: Humanities.

AS.377.211. Introduction to Russian Literature I. 3.0 Credits.
This first intensive reading course of the literary sequence focuses on a survey of major writers, genres, and literary movements of mid-nineteenth century Russia including select works of Pushkin, Gogol, Lermontov, Turgenev, Tolstoy and Dostoevsky adapted to the intermediate level. Taught in Russian
Prerequisites: AS.377.209 AND AS.377.210 or instructor permission
Instructor(s): O. Samilenko
Area: Humanities.

AS.377.215. Second Year Russian. 3.0 Credits.
This course is designed for students who have finished AS.377.116 with C+ or above, or by a placement exam. The goal of the course is the simultaneous progression of four skills (speaking, listening, writing, and reading) as well as familiarity with aspects of Russian linguistics and culture that are necessary for language competency higher than that learned in First Year Russian.
Instructor(s): Staff
Area: Humanities.

AS.377.237. The Russian Press. 3.0 Credits.
Reading and discussion of topics drawn from the Russian press. Designed to strengthen the student's command of Russian vocabulary, especially in the areas of history, political science, and economics, while providing a deeper insight into the dynamics of everyday life in Russia today. Taught at Goucher College.
Prerequisites: AS.377.209 OR AS.377.210 OR Permission of instructor.
Instructor(s): A. Czeczulin
Area: Humanities.

AS.377.253. The Soul of Russia: Culture and Civilization. 3.0 Credits.
The evolution of Russian culture and civilization from the Mongol invasion to the present day conducted through a study of literary texts, architecture, art, music, film, and multimedia. Taught in English. Held at Goucher.
Instructor(s): A. Czeczulin
Area: Humanities
Writing Intensive.

AS.377.269. The Russian Fairy Tale. 3.0 Credits.
A survey course of Russian oral and subsequent written tradition using multimedia and presented against the background of the Indo-European tradition. Taught in English at Goucher College
Instructor(s): A. Czeczulin
Area: Humanities
Writing Intensive.

AS.377.270. Out of the Shadows: Women in Russia. 3.0 Credits.
This course will explore the role of Russian women in the world by carefully examining the significance of contributions by these women. Diverse perspectives will be explored (Russian and Russian National). Students will examine and analyze texts written by and about women struggling with questions regarding patriarchal and male-based society. The fact that these women have remained hidden from Russia and the world at large will also be addressed, using feminist methodologies. This course will provide students with the opportunity to pursue their own questions in dialogue. Rus 270 is available as a traditional or hybrid class. Offered Fall 2015 and every fall. Taught at Goucher College.
Instructor(s): A. Czeczulin
Area: Humanities.

AS.377.312. Chekhov and the Short Story. 3.0 Credits.
Chekhov's short stories and plays studied against the social, political, and philosophic background of his time. Close readings and in-depth stylistic analysis. Designed for advanced students. Taught in Russian
Instructor(s): O. Samilenko
Area: Humanities.

AS.377.315. Third Year Russian. 3.0 Credits.
This course offers advanced training in spoken as well as written Russian. It is designed for students who have basic Russian language proficiency acquired through AS.377.216 or equivalent. Advanced level of grammatical structures will be learned and practiced through communicative tasks.
Instructor(s): Staff
Area: Humanities.

AS.377.318. Chekov and the Short Story. 3.0 Credits.
Chekhov’s short stories and plays studied against the social, political, and philosophic background of his time. Close readings and in-depth stylistic analysis. Designed for advanced students. Taught in Russian
Instructor(s): O. Samilenko
Area: Humanities.

AS.377.335. Technical Translation. 3.0 Credits.
Advanced work in translating—Russian into English—in the sciences and social sciences. Taught at Goucher.
Instructor(s): A. Czeczulin
Area: Humanities.
AS.377.353. The Soul of Russia: Russian Culture and Civilization and Capstone Project. 4.0 Credits.
Students will learn about Russian traditions, folklore, conceptions of the world, and the search for national identity in juxtaposition with Russian history and literature. Seven topics will be covered using literature, music, cuisine and dance. At the 300-level students are required to complete a research paper and a capstone project that includes work in the Russian language done through reading and written assignments or through a documented community-based learning capstone project with the instructor's permission. The course is taught in English. Students taking 253 receive 3 credits. Students taking 353 receive 4 credits.
Instructor(s): A. Czeczulin
Area: Humanities
Writing Intensive.

AS.377.395. Readings in Russian Studies. 2.0 Credits.
The course examines aspects of Russian culture through Russian literature. Readings include a wide range of texts. In this particular course, we will read a play by a Soviet writer and watch a video recording of a contemporary stage show by the Moscow Art Theater. Participation in the course would require reading authentic Russian texts, extensive classroom discussions, and frequent writing assignments. (All texts and videos are in Russian.) Pre-req: 377.315-316 or by permission
Instructor(s): Staff
Area: Humanities.

AS.377.396. Senior Seminar II: Masterpieces of the 20th Century. 3.0 Credits.
A close study of Russian poetry from the eighteenth century to the present, including major poetic movements. Taught in Russian.
Instructor(s): O. Samilenko
Area: Humanities.

AS.377.501. Independent Study-Russian. 3.0 Credits.
Through arrangement with the instructor.
Instructor(s): A. Czeczulin; O. Samilenko

AS.377.505. Independent Study - Russian Technical Translation. 0.0 - 3.0 Credits.
Advanced work in translating Russian into English in the sciences and social sciences.
Prerequisites: AS.377.237 or Instructor permission.
Instructor(s): A. Czeczulin.

AS.377.506. Independent Study - Russian. 0.0 - 3.0 Credits.
Instructor(s): O. Samilenko.

AS.377.599. Independent Study. 3.0 Credits.
Instructor(s): O. Samilenko.

AS.378.115. First Year Japanese. 4.5 Credits.
This course is designed for students who have no background or previous knowledge in Japanese. The course consists of lectures on Tuesday/Thursday and conversation classes on Monday/Wednesdays/Fridays. The goal of the course is the simultaneous progression of four skills (speaking, listening, writing, and reading) as well as familiarity with aspects of Japanese culture. By the end of the fall term, students will have basic speaking and listening comprehension skills, a solid grasp of basic grammar items, reading and writing skills, and a recognition and production of approximately 60 kanji in context. Knowledge of grammar will be expanded significantly in AS.373.215. No Satisfactory/Unsatisfactory. Students may choose to attend either lecture at 10:30 am or 12 pm on TTh. Cross-listed with East Asian Studies
Instructor(s): M. Johnson; S. Katagiri.

AS.378.116. First Year Japanese II. 4.5 Credits.
This course is designed for students who have no background or previous knowledge in Japanese. The course consists of lectures on Tuesday/Thursday and conversation classes on Monday/Wednesdays/Fridays. The goal of the course is the simultaneous progression of four skills (speaking, listening, writing, and reading) as well as familiarity with aspects of Japanese culture. By the end of the fall term, students will have basic speaking and listening comprehension skills, a solid grasp of basic grammar items, reading and writing skills, and a recognition and production of approximately 60 kanji in context. Knowledge of grammar will be expanded significantly in 2nd year Japanese. May not be taken Satisfactory/Unsatisfactory. Recommended Course Background: AS.378.115
Prerequisites: Prereq: AS.378.115 or instructor permission.
Instructor(s): M. Johnson; S. Katagiri.

AS.378.215. Second Year Japanese. 4.5 Credits.
Training in spoken and written language, increasing their knowledge of more complex patterns. At completion, students will have a working knowledge of about 250 Kanji. Recommended Course Background: AS.378.115 and AS.378.116 or equivalent.
Prerequisites: AS.378.116 or equivalent.
Instructor(s): M. Nakao
Area: Humanities.

AS.378.216. Second Year Japanese II. 4.5 Credits.
Continuation of Beginning Japanese and Intermediate Japanese I. Training in spoken and written language, increasing students' knowledge of more complex patterns. At completion, students will have a working knowledge of about 250 Kanji. Lab required. Recommended Course Background: AS.378.215 or equivalent.
Prerequisites: Prereq: AS.378.215 or instructor permission
Instructor(s): M. Nakao
Area: Humanities.

AS.378.315. Third Year Japanese. 3.0 Credits.
Emphasis shifts toward reading, while development of oral-aural skills also continues apace. The course presents graded readings in expository prose and requires students to expand their knowledge of Kanji, grammar, and both spoken and written vocabulary. Cross-listed with East Asian Studies
Prerequisites: AS.378.215 AND AS.378.216 or instructor permission
Instructor(s): M. Nakao
Area: Humanities.

AS.378.316. Third Year Japanese II. 3.0 Credits.
Emphasis shifts toward reading, while development of oral-aural skills also continues apace. The course presents graded readings in expository prose and requires students to expand their knowledge of Kanji, grammar, and both spoken and written vocabulary. Lab required. Continuation of AS.378.315. Recommended Course Background: AS.378.315 or equivalent.
Prerequisites: AS.378.315 or equivalent.
Instructor(s): M. Nakao
Area: Humanities.

AS.378.396. Fundamentals of Japanese Grammar. 2.0 Credits.
This course is designed for students who have already studied 1st-year Japanese grammar and wish to develop a thorough knowledge of Japanese grammar in order to advance all aspects of language skills to a higher level. It is also appropriate for graduate students who need to be able to read materials written in Japanese. Recommended Course Background: AS.378.115-116 or equivalent.
Instructor(s): M. Johnson
Area: Humanities.
AS.378.415. Fourth Year Japanese. 3.0 Credits.
By using four skills in participatory activities (reading, writing, presentation, and discussion), students will develop reading skills in modern Japanese and deepen and enhance their knowledge on Kanji and Japanese culture. Recommended Course Background: AS.378.315 and AS.378.316 or equivalent.
Prerequisites: AS.378.316 or equivalent.
Instructor(s): M. Nakao; S. Katagiri
Area: Humanities.

AS.378.416. Fourth Year Japanese II. 3.0 Credits.
By using four skills in participatory activities (reading, writing, presentation, and discussion), students will develop reading skills in modern Japanese and deepen and enhance their knowledge on Kanji and Japanese culture. Lab required. Recommended Course Background: AS.378.415
Prerequisites: AS.378.415 or instructor permission
Instructor(s): M. Nakao; S. Katagiri
Area: Humanities.

AS.378.501. Independent Study - Japanese. 2.0 Credits.
Independent Study in advanced Japanese language.
Instructor(s): M. Johnson.

AS.378.502. Independent Study - Japanese. 0.0 - 2.0 Credits.
Instructor(s): M. Johnson.

This course is designed for graduate students (in East Asian Studies, Public Health, History of Medicine, History, etc.) and undergraduate students with a strong interest in improving Japanese reading skills. The main goal of the course is to learn strategies for reading and comprehending materials written in Japanese without using a dictionary. Specific strategies and techniques are introduced, followed by practice. Class materials include a broad spectrum of native materials, including novels, newspapers, scholarly articles, essays, historical papers, and so forth. A diverse range of articles and essays are selected to introduce and enforce various ways of reading Japanese effectively. 2 credits for undergraduate students.
Instructor(s): M. Johnson
Area: Humanities.

AS.380.101. First Year Korean. 4.5 Credits.
Introduces the Korean alphabet, hangeul. Covers basic elements of the Korean language, high-frequency words and phrases, including cultural aspects. Focuses on oral fluency reaching Limited Proficiency where one can handle simple daily conversations. No Satisfactory/ Unsatisfactory. Cross-listed with East Asian Studies
Instructor(s): J. Song; S. Lee.

AS.380.102. First Year Korean II. 3.0 Credits.
Focuses on improving speaking fluency to Limited Proficiency so that one can handle simple daily conversations with confidence. It provides basic high-frequency structures and covers Korean holidays. Continuation of AS.380.101. Recommended Course Background: AS.380.101 or permission required.
Prerequisites: AS.380.101 or instructor permission
Instructor(s): J. Song; S. Lee.

AS.380.201. Second Year Korean. 4.0 Credits.
Aims for improving oral proficiency and confident control of grammar with vocabulary building and correct spelling intended. Reading materials of Korean people, places, and societies will enhance cultural understanding and awareness. Project due on Korean cities. Existing demonstrable skills in spoken Korean preferred.
Prerequisites: AS.380.101 AND AS.380.102 or instructor permission
Instructor(s): S. Lee
Area: Humanities.

AS.380.202. Second Year Korean II. 3.0 Credits.
Aims for improving writing skills with correct spelling. Reading materials of Korean people, places, and societies will enhance cultural understanding and awareness, including discussion on family tree. Continuation of AS.380.201. Recommended Course Background: AS.380.201 or equivalent.
Prerequisites: AS.380.201 or equivalent.
Instructor(s): S. Lee
Area: Humanities.

AS.380.301. Third Year Korean. 3.0 Credits.
Emphasizes reading literacy in classic and modern Korean prose, from easy essays to difficult short stories. Vocabulary refinement and native-like grasp of grammar explored. Project due on Korean culture. Cross-listed with East Asian Studies
Prerequisites: AS.380.202 or equivalent.
Instructor(s): S. Lee
Area: Humanities.

AS.380.302. Third Year Korean II. 3.0 Credits.
Emphasizes reading literacy in classic and modern Korean prose. By reading Korean newspapers and professional articles in one's major, it enables one to be well-versed and truly literate. Continuation of AS.380.301. Cross-listed with East Asian Studies Prerequisite: AS.380.301 or equivalent.
Prerequisites: AS.380.301 or instructor permission
Instructor(s): S. Lee
Area: Humanities.

AS.380.401. Fourth Year Korean. 2.0 Credits.
This course is designed for those who have finished AS 380.302 or beyond advanced mid level of competency in Korean in four skills. By dealing with various topics on authentic materials including news, articles on websites, short stories, this course aims to help students enhance not only linguistics knowledge and skills, but also current issues in Korea. It is expected that, by the end of the term, students will be able to discuss a variety of topics and express opinions fluently in both spoken and written language.
Prerequisites: AS.380.302 or instructor permission
Instructor(s): S. Lee
Area: Humanities.

AS.380.402. Fourth Year Korean II. 2.0 Credits.
This course is designed for those who have finished AS 380.302 or beyond advanced mid level of competency in Korean in four skills. By dealing with various topics on authentic materials including news, articles on websites, short stories, this course aims to help students enhance not only linguistics knowledge and skills, but also current issues in Korea. It is expected that, by the end of the term, students will be able to discuss a variety of topics and express opinions fluently in both spoken and written language.
Prerequisites: AS.380.401 or equivalent
Instructor(s): S. Lee
Area: Humanities.
AS.381.101. First Year Hindi I. 3.0 Credits.
Course focuses on acquisition of additional vocabulary and grammatical structures in culturally authentic contexts, listening, speaking, reading, and writing comprehension. No Satisfactory/ Unsatisfactory Instructor(s): U. Saini.

AS.381.102. First Year Hindi II. 3.0 Credits.
This course prepares students to function in everyday situations in the Hindi speaking world. Focuses on the acquisition of basic vocabulary and grammatical structures in culturally authentic contexts through listening, speaking, reading, and writing comprehension. Hindi reading and writing is taught in its original Devanagari script. Oral-aural drills in class and work in the Language Lab is required.
Prerequisites: AS.381.101 or instructor permission
Instructor(s): U. Saini
Area: Humanities.

AS.381.201. Second Year Hindi I. 3.0 Credits.
Course provides refinement of basic language skills in cultural context. Emphasis will be on expansion of vocabulary and grammatical structures and further development of communicative skills. Recommended Course Background: AS.381.101, AS.382.102
Prerequisites: AS.381.102 or equivalent.
Instructor(s): U. Saini
Area: Humanities.

AS.381.202. Second Year Hindi II. 3.0 Credits.
Course provides refinement of basic language skills in cultural context. Emphasis will be on expansion of vocabulary and grammatical structures and further development of communicative skills. Continuation of AS.381.201. Recommended Course Background: AS.381.201 or permission required.
Prerequisites: AS.381.201 or instructor permission
Instructor(s): U. Saini
Area: Humanities.

AS.381.301. Third Year Hindi I. 3.0 Credits.
Learn to converse in Hindi through Hindi songs, films, and media. Promotes the active use of Hindi in culturally authentic contexts. Development of fluency in oral and written communication is emphasized.
Prerequisites: AS.381.201 AND AS.381.202 or instructor permission
Instructor(s): U. Saini
Area: Humanities Writing Intensive.

AS.381.302. Third Year Hindi II. 3.0 Credits.
This course is geared towards listening comprehension, enrichment of vocabulary and exposure to various social situations. Students will get an opportunity to learn to narrate and support their views in informal and formal styles. The course will promote a meaningful interaction to understand the cultural nuances.
Prerequisites: Prereq: AS.381.301 or equivalent.
Instructor(s): U. Saini
Area: Humanities Writing Intensive.

AS.384.115. First Year Hebrew. 4.0 Credits.
Designed to provide reading and writing mastery, to provide a foundation in Hebrew grammar and to provide basic conversational skills. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students’ schedules.
Instructor(s): Z. Cohen.

AS.384.116. First Year Hebrew II. 3.0 Credits.
Designed to provide reading and writing mastery, to provide a foundation in Hebrew grammar and to provide basic conversational skills. Cross-listed with Jewish Studies.
Prerequisites: AS.384.115
Instructor(s): Z. Cohen
Area: Humanities.

AS.384.215. Second Year Hebrew. 3.5 Credits.
Designed to enrich vocabulary and provide intensive grammatical review, and enhance fluency in reading, writing and comprehension. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students’ schedules.
Prerequisites: AS.384.116 or equivalent.
Instructor(s): Z. Cohen
Area: Humanities.

AS.384.216. Second Year Hebrew II. 3.0 Credits.
Designed to enrich vocabulary and provide intensive grammatical review, and enhance fluency in reading, writing and comprehension. Recommended Course Background: AS.384.215 or permission required.
Prerequisites: AS.384.215
Instructor(s): Z. Cohen
Area: Humanities.

AS.384.315. Third Year Hebrew. 4.0 Credits.
Designed to maximize comprehension and the spoken language through literary and newspaper excerpts providing the student with the language of an educated Israeli. Cross-listed with Jewish Studies. Final day/time will be determined during the first week of classes based on students’ schedules.
Prerequisites: AS.384.216 or equivalent.
Instructor(s): Z. Cohen
Area: Humanities.

AS.384.316. Third Year Hebrew II. 3.0 Credits.
Designed to maximize comprehension and the spoken language through literary and newspaper excerpts providing the student with the language of an educated Israeli. Recommended Course Background: AS.384.315 or permission required. Cross-listed with Jewish Studies.
Prerequisites: AS.384.315 or instructor permission
Instructor(s): Z. Cohen
Area: Humanities.

AS.385.503. Summer Internship-Hebrew. 1.0 Credit.
Instructor(s): Z. Cohen
Area: Humanities.

Cross Listed Courses
East Asian Studies
AS.310.316. First Year Classical Chinese: Language and Literature of the Ancient Period. 3.0 Credits.
Readings in prose and poetic texts of the Zhou and Han Dynasties. Class emphasizes language acquisition, especially grammar and vocabulary memorization. In addition we will read and discuss works in western languages that treat the culture and writers of the Ancient period. Quizzes and Tests (Midterm and Final) will cover both language and cultural data. A short paper also required.
Instructor(s): V. Cass
Area: Humanities.
Latin American Studies

http://krieger.jhu.edu/plas

The Program in Latin American Studies (PLAS) promotes the study of the histories, cultures, societies, and political systems of Latin America and the Caribbean at the Johns Hopkins University. PLAS’s curricular offerings and extracurricular activities provide undergraduate and graduate students with opportunities to explore the rich political, aesthetic, intellectual, and scientific traditions of Latin America. The program also regularly sponsors scholarship and teaching related to Latino Studies. Drawing on faculty expertise across the disciplines, PLAS aims to generate new perspectives on Latin America, the Caribbean, and the experience of Latinos in the United States.

PLAS coordinates an undergraduate major and minor in Latin American studies. The major and minor are designed to deepen student interest in, and understanding of, Latin America through course work and extracurricular programs. The program encourages and supports students wishing to undertake summer research in Latin America as well as those who seek to study abroad at Latin American universities.

Information about PLAS may be found on its website:

Major/Minor in Latin American Studies
Students entering Hopkins in Fall 2018 are not eligible to declare this major or minor. Questions may be directed to the KSAS Dean’s Office.

Also see Requirements for a Bachelor’s Degree (p. 7).

The Program in Latin American Studies (PLAS) coordinates a major and a minor in Latin American studies. It aims to provide undergraduate students with a broad understanding of the complexity and richness of Latin American political, social, and cultural phenomena. As a result of completing the major or the minor, students will have gained a deep understanding of Latin American politics, economy, society, and culture, as well as of the intricate relationship between the region and the United States.

Learning Goals:

Students who graduate with a major or a minor in Latin American studies from Johns Hopkins will be able to:

• Demonstrate command of either Spanish or Portuguese in order to read documents, literature, or view media at an advanced level.
• Write effectively and support their arguments with appropriate evidence.
• Demonstrate an understanding of research methodologies drawn from both the humanities and social sciences appropriate to the field of Latin American studies.
• Critically evaluate the position of Latin America in an increasingly globalized world
• Demonstrate an awareness of the variety of cultures in Latin America.
• Demonstrate familiarity with the Latin American literary tradition and be able to analyze and interpret literary texts.

Students who decide to major or minor in Latin American studies are required to study Spanish or Portuguese. Language requirements can be waived for those who demonstrate suitable knowledge of either Spanish or Portuguese, or in an Amerindian language such as Quechua or Guarani. The general “Introduction to Latin American Studies” course is required for the major.

Though students may choose to emphasize a particular area of specialization within Latin American studies (e.g., politics, public health, literature), the major and minor programs require a distribution of courses across a variety of areas.

Requirements for the Major
The requirements for a major in Latin American Studies are as follows:

• Four lower-level courses (100- and 200-level courses) dealing with Latin America, one of which must be the general introductory course (AS.361.130 Introduction to Latin American Studies) to Latin America.
• Five upper-level courses (300-level courses and above) focused on Latin America.
• Two electives courses (at any level) relevant or with reference to Latin America.
• Language proficiency (i.e., reading fluency and basic conversational skills) through the advanced level in either Spanish or Portuguese will be required. Language requirements can be waived for those who demonstrate a suitable proficiency in either Spanish or Portuguese.
• No grade below C- will be accepted for the major requirements and courses may not be taken satisfactory/unsatisfactory.

Language proficiency in Spanish or Portuguese through the advanced level 0-20
AS.361.130 Introduction to Latin American Studies 3
Three 100- or 200-level courses relating to Latin America 9
Five 300-level or higher courses relating to Latin America 15
Two elective courses relating to Latin America chosen with advisor’s approval. 6

Total Credits 33-53

* Language proficiency can be demonstrated by the completion of AS.210.312 Advanced Spanish II or AS.210.392 Advanced Portuguese: Language and Literature II or via placement exam. Students may begin at a higher level of language acquisition via placement exam.

Honors in the Major
To be eligible for honors in Latin American Studies, a 3.5 GPA in the major courses as well as the completion of a senior honors thesis in Latin American Studies is required.

Sample Four Year Plan of Study

Freshman

<table>
<thead>
<tr>
<th>Fall Credit</th>
<th>Spring Credit</th>
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<tbody>
<tr>
<td>AS.361.130</td>
<td>3 100/200-level Latin American Studies course</td>
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<tr>
<td>AS.210.111</td>
<td>4 AS.210.112 Spanish Elements I*</td>
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<td>or 177</td>
<td>or 178 Spanish Elements II*</td>
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Sophomore

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<th>Fall Credit</th>
<th>Spring Credit</th>
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<tr>
<td>100/200 level Latin American Studies Course</td>
<td>3 100/200 level Latin American Studies Course</td>
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</table>
The requirements for a minor in Latin American Studies are as follows:

**Requirements for the Minor**

The requirements for a minor in Latin American Studies are as follows:

- Four upper-level courses (300 or above) focused on Latin America. Intersession courses may not be used to fulfill this requirement.
- Two additional courses at any level dealing with Latin America. Note: 3-credit intersession or summer session non-language courses offered by JHU may be used to fulfill this requirement.
- Language proficiency through the intermediate level in either Spanish or Portuguese.
- No grade below C- will be accepted for the minor requirement and courses may not be taken satisfactory/unsatisfactory.

**Language proficiency in Spanish or Portuguese through the intermediate level**

0-14

**Two courses at any level relating to Latin America**

6

**Four courses at the 300-level or higher relating to Latin America**

12

**Total Credits**

18-32

* Language proficiency can be demonstrated by the completion of AS.210.212 Intermediate Spanish II or AS.210.278 Intermed/Adv Portuguese or via placement exam.

For current course information and registration go to https://isis.jhu.edu/classes/

### Latin American Studies

**AS.361.130. Introduction to Latin American Studies. 3.0 Credits.**

The goal of this course is to provide an overview of Latin America, analyzing political and cultural aspects, chronologically organized. We will begin studying the origins of the multi-ethnic societies, starting with the ancient civilizations and their transformation under colonization. It is important to understand the survival of cultural traits among indigenous peasants today in the countries that were the cradle of ancient civilizations: Mexico, Guatemala and the Andean countries. In the republican era the course will focus on the classical Caribbean dictators in the first half of the 20th century and their reflection in the literature, comparing the historical reality with the magic representation in the work of Garcia Marquez. The course will scrutinize the most important revolutions in the continent: the Mexican, Cuban and Bolivian revolutions and the geopolitics of USA in the Americas. Weekly lectures related to the assigned reading will focus on specific periods, topics and regions. After each lecture, we will review the material, connecting specific details from the readings with the more theoretical aspects provided in my lecture. The course has a website where the PowerPoint presentations will be posted. Students are encouraged to post their questions, comments and suggestions on the web after their readings. Students will be given a study guide for each lecture, which will be the basis for the exams. Our perspective on Latin America will be enhanced by a selection of few films related to the topics.

Instructor(s): E. Cervone

Area: Humanities, Social and Behavioral Sciences.

**AS.361.502. Independent Study. 0.0 - 3.0 Credits.**

Instructor(s): G. Paquette; H. Robbins; S. Castro-Klaren.

**AS.361.550. Internship. 1.0 Credit.**

Instructor(s): G. Paquette; H. Robbins; S. Castro-Klaren.

**Cross-Listed Course Offerings**

**Anthropology**

**AS.070.285. Understanding Aid: Anthropological Perspectives for Technology-Based Interventions. 3.0 Credits.**

This course combines anthropological perspectives with the discussion and examination of technology-based interventions in the field of development and aid policies, with particular focus on activities related to water resources, sanitation, and hygiene. Readings and discussions analyze some of the theoretical, historically rooted, and practical issues that challenge those who hope to provide effective aid. A key aim of this course is to provide students with better understanding of cultural, social, environmental and economic issues relevant to technical intervention in developing countries.

Instructor(s): E. Cervone; W. Ball

Area: Humanities, Social and Behavioral Sciences

Writing Intensive.

**German and Romance Languages & Literatures**

**AS.211.380. Modern Latin American Culture. 3.0 Credits.**

Taught in Spanish. This course will explore the fundamental aspects of Latin America culture from the formation of independent states through the present—in light of the social, political, and economic histories of the region. The course will offer a general survey of history of Latin America, and will discuss texts, movies, songs, pictures, and paintings, in relation to their social, political, and cultural contexts. May not be taken satisfactory/unsatisfactory.

**Prerequisites:** AS.210.312

Area: Humanities.
AS.211.394. Brazilian Culture & Civilization. 3.0 Credits.
The course is taught in English. No knowledge of Portuguese is required. This course is intended as an introduction to the culture and civilization of Brazil. It is designed to provide students with basic information about Brazilian history, art, literature, popular culture, theater, cinema, and music. The course will focus on how indigenous Asian, African, and European cultural influences have interacted to create the new and unique civilization that is Brazil today. The course is taught in English, but ONE extra credit will be given to students who wish to do the course work in Portuguese. Those wishing to do the course work in English for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. The sections will be taught simultaneously. Section 01: 3 credits Section 02: 4 credits (instructor's permission required)
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.

AS.215.458. Cuba and its Culture Since the Revolution. 3.0 Credits.
We will study the visual and textual arts, cinema, political culture, and blogosphere; reaching back to the first phases in the building of the revolutionary state apparatus and its sovereign mandate. Taught in Spanish.
Prerequisites: AS.210.312[C]
Instructor(s): E. Gonzalez
Area: Humanities.

Readings from colonial times to the present from three cultural legacies, Hispanic, English and French. Centered on slavery and its sequels.
Instructor(s): E. Gonzalez.

History of Art
AS.010.105. Art of the Ancient Americas. 3.0 Credits.
This course provides a basis for the study of ancient Americas art and architecture and a broad exposure to the issues relevant to its study. Select visual arts within the primary regions of Mexico and Central America will be emphasized. In conjunction with the Baltimore Museum of Art (BMA) and the JHU Archaeological Museum (JHAM), students will participate in on-site study of the collections.
Instructor(s): L. DeLeonardis
Area: Humanities.

AS.010.320. Art of Colonial Peru. 3.0 Credits.
Viewed within the dynamic historical context of colonial society, we consider the pictorial, sculptural, and architectural programs that ensued in viceregal Peru (1532-1825). We examine the role of religious orders, art schools, artisan guilds and cofradía, and consider the social and political implications of art patronage.
Instructor(s): L. DeLeonardis
Area: Humanities.

AS.010.365. Art of the Ancient Andes. 3.0 Credits.
The ancient visual arts of Andean South America and their respective cultural contexts form the basis of this course. In conjunction with the Baltimore Museum of Art and the Johns Hopkins Archaeological Museum students will have access to collections for study.
Instructor(s): L. DeLeonardis
Area: Humanities.

History of Science
AS.140.390. Science and Technology in Latin America. 3.0 Credits.
The course surveys the development of western science and technology in Hispanic America (1492 to the present). We begin studying the hybridization of scientific practices between European and Native American cultures during the early colonial era and end with the transfer of technologies and industrialization of the 20th century. We emphasize the role on science and technology in state formation, the acculturation of foreign ideas in colonial and postcolonial societies, and the role of intellectual elites in modernization programs.
Instructor(s): M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

Sociology
AS.230.343. Political Sociology of Latin America. 3.0 Credits.
This course provides an overview of Latin America through its historical, economic, social, and political dimensions. Emphasis will be given to the analysis of social structures: class, race and ethnicity, and the contemporary social movements. The course begins with an overview of the pre-Columbian civilizations and colonial legacies that gave rise to the multiethnic societies and the ethnic conflicts which characterize contemporary Latin America. Cross-listed with Program in Latin American Studies and International Studies (CP)
Instructor(s): M. von der Heydt-Coca
Area: Social and Behavioral Sciences.

AS.230.346. Economic Sociology of Latin America. 3.0 Credits.
This course will offer an overview of Latin America's economic reality as an intertwined process of economic and political domestic factors within the constraints of the world economy. Latin American development will be analyzed from a historical perspective. The first half of the semester the course will focus on the analysis of the economic developmental patterns starting in the middle of the 19th century to the populist era in the middle of the 20th century. In the second half of the semester, we will analyze in depth the contemporary neoliberal approach to development. Globalization is the force that drives economic, social and political processes in Latin America. The course will include case studies as well the social conflicts generated by the increasing polarization of the society. Students will be exposed to important sociological theories.
Instructor(s): M. von der Heydt-Coca
Area: Social and Behavioral Sciences.

For current faculty and contact information go to http://krieger.jhu.edu/plas/

Faculty
Director
Gabriel Paquette
Director, Program in Latin American Studies; Professor, Department of History

Professors
Sara Castro-Klarén
Professor, Department of German and Romance Languages and Literatures

Laura Caulfield
Professor, International Health, Bloomberg School of Public Health

Lisa DeLeonardis
Professor, Department of History of Art

William Egginton
Mathematics

http://www.mathematics.jhu.edu/

Mathematics, more than the fundamental language and underlying analytical structure of science and technology, is a formal way of thinking—an art that ties together the abstract structure of reason and the formal development of the logic that defines the scientific method. From the study of just how arguments and theories are formed in language and technology to the framework of quantitative and qualitative models of the natural and social sciences, mathematics is based upon the development of precise expressions, logical arguments, and the search for and exposure of pattern and structure.

The undergraduate program in the Department of Mathematics is intended both for students interested in attaining the proper preparation for graduate study and research in pure mathematics, and for students interested in using mathematics to define, properly pose, and solve problems in the sciences, engineering, and other areas. With either purpose, the focus of the program is to help those who wish to understand further the logical content, geometric meaning, and abstract reasoning of mathematics itself. A flexible program involving a broad selection of courses is a department tradition. The program begins by introducing students to the basics of algebra and mathematical analysis and then gives them the choice of exploring topics in theoretical mathematics or studying applications to physics, economics, engineering, computer science, probability, statistics, or mechanics.

The graduate program is designed primarily to prepare students for research and teaching in mathematics. It is naturally centered around the research areas of the faculty, which include algebraic geometry, algebraic number theory, differential geometry, partial differential equations, topology, several complex variables, algebraic groups, and representation theory. The program can be supplemented in applied directions by courses in theoretical physics, computer science, mechanics, probability,
and statistics offered in other departments of the Krieger School of Arts and Sciences and in the Department of Applied Mathematics in the Whiting School of Engineering.

Facilities
The Mathematics Department resides in Krieger Hall on the Keyser Quad of Homewood. Adjacent to Krieger Hall, The University’s Milton S. Eisenhower Library has an unusually extensive collection of mathematics literature, including all the major research journals, almost all of which are accessible electronically. The stacks are open to students. The department also has a useful reference library, the Philip Hartman Library. Graduate students share departmental offices, and study space can also be reserved in the university library. Graduate students may access the department’s Linux and Windows servers, as well as computers in graduate student offices. The department also hosts numerous research seminars, special lectures, and conferences throughout the academic year.

Undergraduate Programs
Math Course Placement and Sequencing for All Students
There are three different versions of single variable calculus offered by the Mathematics Department, including 2 versions of semester courses in Calculus I and II, roughly equivalent to Calculus AB and BC in the College Board’s Advanced Placement (AP) system, and a single semester honors version encompassing both Calculus I and II. Students should select their first course in mathematics at JHU based on their intended areas of study, prior experience and training in mathematics, and the results of an advisory Placement Exam offered to incoming freshmen. Students intending to major in mathematics, the natural sciences, or engineering, or who are interested in studying mathematics beyond a year of calculus, may wish to take the sequence AS.110.106 Calculus I (Biology and Social Sciences) - AS.110.109 Calculus II (For Physical Sciences and Engineering) sequence or AS.110.113 Honors Single Variable Calculus. Students majoring in other subjects, or who do not intend to continue taking mathematics courses beyond a year of calculus, may wish to take the sequence AS.110.106 Calculus I (Biology and Social Sciences) - AS.110.107 Calculus II (For Biological and Social Science). This latter sequence relates the methods of calculus to the biological and social sciences. A one-semester pre-calculus course (AS.110.105 Introduction To Calculus) is a pre-calculus course offered for students who would benefit from additional preparation in the basic tools (algebra, trigonometry and the properties of functions) used in calculus.

Entering students may receive course credit for Calculus I or Calculus I and II on the basis of the performance level on either the (AP) or International Baccalaureate (IB) exams (p. 21). All students, regardless of completion of advanced placement exams previously, must take a departmental placement exam to determine their appropriate first course in mathematics. Additional placement information can be found here (http://mathematics.jhu.edu/undergraduate/placement-exams).

After completing a full year of calculus, the courses AS.110.201 Linear Algebra, AS.110.202 Calculus III, or AS.110.302 Differential Equations and Applications may be taken in any order. The department offers honors courses of the former 2; AS.110.212 Honors Linear Algebra and AS.110.211 Honors Multivariable Calculus.

Requirements for the B.A. Degree
In addition to the Requirements for a Bachelor’s Degree (p. 7), a candidate for the Bachelor of Arts Degree in Mathematics is required to have completed the major requirements listed below. All courses used to meet these requirements must be completed with a grade of C- or better and may not be taken satisfactory/unsatisfactory (S/U) grading scheme.

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.106</td>
<td>Calculus I (Biological and Social Sciences)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.108</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>AS.110.107</td>
<td>Calculus II (For Biological and Social Science)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td></td>
</tr>
<tr>
<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
<td></td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>AS.110.201</td>
<td>Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.212</td>
<td>Honors Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>AS.110.401</td>
<td>Introduction to Abstract Algebra</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.411</td>
<td>Honors Algebra I</td>
<td></td>
</tr>
<tr>
<td>One Additional Algebra Course From List:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS.110.304</td>
<td>Elementary Number Theory</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.412</td>
<td>Honors Algebra II</td>
<td></td>
</tr>
<tr>
<td>or AS.110.413</td>
<td>Introduction To Topology</td>
<td></td>
</tr>
<tr>
<td>or AS.110.422</td>
<td>Representation Theory</td>
<td></td>
</tr>
<tr>
<td>or AS.110.423</td>
<td>Lie Groups for Undergraduates</td>
<td></td>
</tr>
<tr>
<td>or AS.110.435</td>
<td>Introduction to Algebraic Geometry</td>
<td></td>
</tr>
<tr>
<td>AS.110.405</td>
<td>Real Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.415</td>
<td>Honors Analysis I</td>
<td></td>
</tr>
<tr>
<td>One Additional Analysis Course From List:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS.110.311</td>
<td>Methods of Complex Analysis</td>
<td></td>
</tr>
<tr>
<td>or AS.110.404</td>
<td>Real Analysis II</td>
<td></td>
</tr>
<tr>
<td>or AS.110.416</td>
<td>Honors Complex Analysis</td>
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</tr>
<tr>
<td>or AS.110.417</td>
<td>Introduction To Topology</td>
<td></td>
</tr>
<tr>
<td>or AS.110.418</td>
<td>Honors Analysis II</td>
<td></td>
</tr>
<tr>
<td>or AS.110.407</td>
<td>Partial Differential Equations</td>
<td></td>
</tr>
<tr>
<td>or AS.110.421</td>
<td>Dynamical Systems</td>
<td></td>
</tr>
<tr>
<td>or AS.110.422</td>
<td>Introduction Calculus of Variations</td>
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</tr>
<tr>
<td>or AS.110.431</td>
<td>Introduction To Differential Geometry</td>
<td></td>
</tr>
<tr>
<td>or AS.110.441</td>
<td>Calculus on Manifolds</td>
<td></td>
</tr>
<tr>
<td>or AS.110.442</td>
<td>Fourier Analysis</td>
<td></td>
</tr>
</tbody>
</table>

One 300-level or higher math course
Two courses in any one of the approved applications of mathematics or other courses approved by the Director of Undergraduate Studies

Total Credits 40

* Majors are encouraged but not required to take honors variant.
** See table below for approved application courses.
*** AS.110.413 Introduction to Topology cannot be used for more than one requirement.
**** Honors Single Variable is a single 4 credit course that will count toward the major or minor in mathematics as both Calculus I and Calculus II.

Approved courses in areas of application:

Physics
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.204</td>
<td>Classical Mechanics II</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.301</td>
<td>Electromagnetic Theory II</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.303</td>
<td>Quantum Mechanics I</td>
<td>4</td>
</tr>
</tbody>
</table>
Sample Program of Study
The following chart is one example of how a student might progress through the mathematics major. As potential math majors enter JHU with a wide range of prior math abilities, students should begin courses at their current level of knowledge.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III or 211</td>
</tr>
<tr>
<td>AS.110.201</td>
<td>Linear Algebra or 212</td>
</tr>
<tr>
<td>AS.110.302</td>
<td>Differential Equations and Applications (or other 300+ level elective)</td>
</tr>
</tbody>
</table>

Honors Program in Mathematics
As a general guideline, departmental honors are awarded to recipients of the B.A. degree who have completed AS.110.411 Honors Algebra I, as well as AS.110.412 Honors Algebra II, AS.110.415 Honors Analysis I, AS.110.416 Honors Analysis II, AS.110.407 Honors Complex Analysis and one more course at the 400-level or above with a combined grade point average of at least 3.6/4.0.

J.J. Sylvester Prize
The J.J. Sylvester Prize in Mathematics, which carries a cash award, is given each year to the one of two top-performing graduating seniors majoring in mathematics for outstanding achievement.

The B.A./M.A. Program
By applying some courses simultaneously toward the requirements for the Bachelor of Arts degree and a Master of Arts degree, an advanced student can qualify for both degrees during the four years of undergraduate study. Admission to the BAMA Program is by the standard graduate application form, completed during a student's junior year of study. A current GPA of at least a 3.0/4.0 is required in the 400-level mathematics courses taken while resident at the university, and at the time of application, a student must be a candidate for honors in the undergraduate degree. Students may contact the graduate program assistant for further information.

Undergraduate Teaching Assistantships
The department awards many upper-level undergraduates the opportunity to act as recitation instructors to our freshman courses. This award enables a student to practice the art of teaching and communicating mathematics in an environment where they are hired as a formal instructor to aid the professor of a regular curriculum course as a Teaching Assistant (TA). Undergraduate TAs are fully mentored.
and monitored, and the position provides a valuable credential and experience.

**Graduate Programs**

**Admission**
Admission to the Ph.D. program is based on academic records, letters of recommendation, a statement of purpose, an optional personal statement, and Graduate Record Examination scores.

**Basic Program**
Graduate study is centered around three core areas:

### Analysis
- AS.110.605 Real Variables
- AS.110.607 Complex Variables
- AS.110.608 Riemann Surfaces
- AS.110.631 Partial Differential Equations I
- & AS.110.632 Partial Differential Equations II
- AS.110.645 Riemannian Geometry

### Algebra
- AS.110.601 Algebra
- & AS.110.602 and Algebra
- AS.110.617 Number Theory
- AS.110.619 Lie Groups and Lie Algebras
- AS.110.643 Algebraic Geometry
- & AS.110.644 and Algebraic Geometry

### Topology
- AS.110.615 Algebraic Topology
- & AS.110.616 and Algebraic Topology

These 600-level graduate courses are preliminary to research upon the foundations of an undergraduate math major.

The 700-level courses are designed to bring students abreast of recent developments and to prepare them for research in the area of their choice.

### Requirements for the M.A. Degree
Although the Mathematics Department does not admit students seeking a terminal M.A. degree, students in the Ph.D. program may earn an M.A. degree. Advanced undergraduate students may also apply to be admitted to the accelerated B.A./M.A. program.

M.A. candidates must complete:

- Four graduate courses given by the Johns Hopkins Mathematics Department;
- Two additional courses at the graduate or 400-level, other than AS.110.401, AS.110.405, and AS.110.415, given by the Johns Hopkins Mathematics Department, or, with the permission of the graduate program director, graduate mathematics courses given by other departments or universities.

All courses used to satisfy the requirements must be completed with a grade of B- or better. (Advanced graduate courses completed with a grade of P can also be used to satisfy the requirements.)

### Requirements for the Ph.D. Degree
The departmental requirements for the Ph.D. degree are:

1. Candidates must show satisfactory work in Algebra (AS.110.601-AS.110.602), Real Variables (AS.110.605), Complex Variables (AS.110.607), Algebraic Topology (AS.110.615), and one additional mathematics graduate course in their first year. The seminars and qualifying exam preparation course cannot be used to fulfill this requirement. The algebra and analysis requirements can be satisfied by passing the corresponding written qualifying exam in September of the first year; these students must complete at least two courses each semester. Students having sufficient background in topology can substitute an advanced topology course for AS.110.615, with the permission of the instructor.
2. Candidates must pass written qualifying exams by the beginning of their second year in Analysis (Real and Complex) and in Algebra. Exams are scheduled for September and May of each academic year.
3. Candidates must show satisfactory work in at least two mathematics graduate courses each semester of their second year, and, if they have not passed their oral qualifying exam, in the first semester of their third year.
4. Candidates must pass a departmental oral qualifying examination in the student's chosen area of research by April 8th of the third year. The topic of the exam is chosen in consultation with the faculty member who has agreed (provisionally) to be the student's thesis advisor, who will also be involved in administering the exam.
5. There is no longer a Mathematics Department foreign language requirement. With the vast majority of articles written in English, the importance of having the capability of reading another language has diminished. However, important earlier literature in certain areas of mathematics may be written in French, German, or Russian. Moreover, some articles are still being written in French. It is now at the discretion of the student's thesis advisor whether to impose a language requirement.
6. Candidates must produce a dissertation based upon independent and original research.
7. Candidates will gain teaching experience in mathematics as a teaching assistant for undergraduate courses. The student will be under the supervision of both the faculty member teaching the course and the director of undergraduate studies. First year students are given a reduced TA workload in the spring semester (this is related to item #2).
8. After completion of the thesis research the student will defend their dissertation by means of the Graduate Board Oral Exam. The exam must be held at least three weeks before the Graduate Board deadline the candidate wishes to meet.

### Financial Aid
Students admitted to the Ph.D. program receive teaching assistantships and full tuition fellowships. Exceptional applicants become candidates for one of the university’s George E. Owen Fellowships.

**William Kelso Morrill Award**
The William Kelso Morrill Award for excellence in the teaching of mathematics is awarded every spring to the graduate student who best exemplifies the traits of Kelso Morrill: a love of mathematics, a love of teaching, and a concern for students.

**Excellence in Teaching Awards**
Three awards are given each year to a junior faculty member and graduate student teaching assistants who have demonstrated exceptional ability and commitment to undergraduate education.
For current faculty and contact information go to http://www.mathematics.jhu.edu/people/

**Faculty**

**Chair**
David Savitt
Number theory, Galois representations.

**Professors**
Caterina Consani
Arithmetic geometry, number theory, and non-commutative geometry.

Nitu Kitchloo
Symplectic geometry, topology of Kac-Moody groups, classical algebraic topology

Hans Lindblad
Harmonic analysis, PDE, fluid dynamics, relativity.

Chikako Mese
Geometric analysis.

Mauro Maggioni

Bernard Shiffman
Several complex variables, complex geometry.

Vyacheslav V. Shokurov
Algebraic geometry.

Yannick Sire
Harmonic analysis, real geometry, complex geometry.

Christopher Sogge
J.J. Sylvester Professor; Fourier analysis, partial differential equations.

Joel Spruck
J.J. Sylvester Professor; Partial differential equations, geometric analysis.

W. Stephen Wilson
Algebraic topology, homotopy theory.

Steven Zucker
Hodge theory, algebraic geometry.

**Associate Professors**
Jacob Bernstein
Minimal surface theory, mean curvature flow.

Ben Dodson
Partial differential equations, harmonic analysis.

**Assistant Professors**
Fei Lu
Malliavin Calculus and stochastic partial differential equations, data-driven model reduction and data assimilation.

Emily Riehl
Homotopy theory.

Brian Smithling
Arithmetic, algebraic geometry.

Yi Wang
Geometric analysis, nonlinear partial differential equations

**Associate Teaching Professor**
Richard Brown
Director of Undergraduate Studies; Dynamical systems, low-dimensional topology.

**Emeriti**
J. Michael Boardman
Differential topology, algebraic topology.

Jack Morava
Algebraic topology, mathematical physics.

Takashi Ono
Algebra, number theory, algebraic groups.

**J.J.Sylvester Assistant Professor**
Christian Gavrus
Partial differential equations, harmonic analysis

Jingjun Han
Algebraic geometry

Jonas Luehrmann
Partial differential equations, mathematical physics.

Joel Specter
Number theory

Liming Sun
Geometric analysis, partial differential equations

Hang Xu
Complex geometry.

Valentin Zakharevich
Algebraic topology, quantum field theory

Xudong Zheng
Algebraic geometry.

**Associate Research Scientist/Lecturer**
Jian Kong
IT Senior Lecturer; Algebraic geometry.

**Assistant Research Professor**
Sui Tang
Applied harmonic analysis, mathematical signal processing.

Stefano Vigogna
Machine Learning, Harmonic Analysis.

**Joint Appointments**
Gregory Eyink
Professor (Applied Mathematics); Mathematical physics, fluid mechanics, turbulence, dynamical systems.

For current course information and registration go to https://sis.jhu.edu/classes/
Courses

AS.110.105. Introduction To Calculus. 4.0 Credits.
This course starts from scratch and provides students with all the background necessary for the study of calculus. It includes a review of algebra, trigonometry, exponential and logarithmic functions, coordinates and graphs. Each of these tools will be introduced in its cultural and historical context. The concept of the rate of change of a function will be introduced. Not open to students who have studied calculus in high school.
Instructor(s): C. VanBlargan
Area: Quantitative and Mathematical Sciences.

AS.110.106. Calculus I (Biology and Social Sciences). 4.0 Credits.
Differential and integral calculus. Includes analytic geometry, functions, limits, integrals and derivatives, introduction to differential equations, functions of several variables, linear systems, applications for systems of linear differential equations, probability distributions. Many applications to the biological and social sciences will be discussed.
Instructor(s): B. Smithling; X. Zheng
Area: Quantitative and Mathematical Sciences.

AS.110.107. Calculus II (For Biological and Social Science). 4.0 Credits.
Differential and integral Calculus. Includes analytic geometry, functions, limits, integrals and derivatives, introduction to differential equations, functions of several variables, linear systems, applications for systems of linear differential equations, probability distributions. Applications to the biological and social sciences will be discussed, and the courses are designed to meet the needs of students in these disciplines.
Instructor(s): L. Sun
Area: Quantitative and Mathematical Sciences.

AS.110.108. Calculus I. 4.0 Credits.
Differential and integral calculus. Includes analytic geometry, functions, limits, integrals and derivatives, polar coordinates, parametric equations, Taylor’s theorem and applications, infinite sequences and series. Some applications to the physical sciences and engineering will be discussed, and the courses are designed to meet the needs of students in these disciplines.
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

AS.110.109. Calculus II (For Physical Sciences and Engineering). 4.0 Credits.
Differential and integral calculus. Includes analytic geometry, functions, limits, integrals and derivatives, polar coordinates, parametric equations, Taylor’s theorem and applications, infinite sequences and series. Some applications to the physical sciences and engineering will be discussed, and the courses are designed to meet the needs of students in these disciplines.
Instructor(s): Y. Wang
Area: Quantitative and Mathematical Sciences.

AS.110.113. Honors Single Variable Calculus. 4.0 Credits.
This is an honors alternative to the Calculus sequences AS.110.106-AS.110.107 or AS.110.108-AS.110.109 and meets the general requirement for both Calculus I and Calculus II (although the credit hours count for only one course). It is a more theoretical treatment of one variable differential and integral calculus and is based on our modern understanding of the real number system as explained by Cantor, Dedekind, and Weierstrass. Students who want to know the "why's and how's" of Calculus will find this course rewarding. Previous background in Calculus is not assumed. Students will learn differential Calculus (derivatives, differentiation, chain rule, optimization, related rates, etc), the theory of integration, the fundamental theorem(s) of Calculus, applications of integration, and Taylor series. Students should have a strong ability to learn mathematics quickly and on a higher level than that of the regular Calculus sequences.
Instructor(s): A. Nakade
Area: Quantitative and Mathematical Sciences.

AS.110.160. The Mathematics of Infinity. 1.0 Credit.
An interdisciplinary introduction to the history of infinity in mathematics, from Zeno's paradox to the development of calculus to the crisis in the foundations of mathematics in the early 20th century. We will read about history, discuss philosophy, and learn some mathematics (including a crash course in mathematical logic and proof, building up to the rigorous definition of limits). A previous course in calculus is not required, but some mathematical maturity will be necessary.
Instructor(s): V. Lorman.

AS.110.201. Linear Algebra. 4.0 Credits.
Prerequisites: Grade of C- or better in AS.110.107 or AS.110.109 or AS.110.113 or AS.110.202 or AS.110.302, or a 5 on the AP BC exam.
Instructor(s): S. Tang
Area: Quantitative and Mathematical Sciences.

AS.110.202. Calculus III. 4.0 Credits.
Calculus of functions of more than one variable: partial derivatives, and applications; multiple integrals, line and surface integrals; Green’s Theorem, Stokes’ Theorem, and Gauss’ Divergence Theorem.
Prerequisites: Grade of C- or better in AS.110.107 OR AS.110.109 OR AS.110.113 OR AS.110.201 OR AS.110.212 OR AS.110.302, or a 5 on the AP BC exam.
Instructor(s): E. Riehl
Area: Quantitative and Mathematical Sciences.

AS.110.211. Honors Multivariable Calculus. 4.0 Credits.
This course includes the material in AS.110.202 with some additional applications and theory. Recommended for mathematically able students majoring in physical science, engineering, or especially mathematics.
AS.110.211-AS.110.212 used to be an integrated yearlong course, but now the two are independent courses and can be taken in either order.
Prerequisites: Grade of C- or better in (AS.110.201 or AS.110.212)
Instructor(s): X. Zheng
Area: Quantitative and Mathematical Sciences.
AS.110.212. Honors Linear Algebra. 4.0 Credits.
This course includes the material in AS.110.201 with additional applications and theory, and is recommended only for mathematically able students majoring in physical science, engineering, or mathematics who are interested in a proof-based version of linear algebra. This course can serve as an Introduction to Proofs (IP) course. Prerequisites: Grade of B+ or better in 110.107 or 110.109 or 110.113, or a 5 on the AP BC exam. Area: Quantitative and Mathematical Sciences.
Prerequisites: Grade of B+ or better in AS.110.107 or AS.110.109 or AS.110.113 or AS.110.202, or AS.110.302, or a 5 on the AP BC exam.
Instructor(s): W. Wilson
Area: Quantitative and Mathematical Sciences.

AS.110.225. Problem Solving Lab. 2.0 Credits.
This course is an introduction to mathematical reason and formalism in the context of mathematical problem solving, such as induction, invariants, inequalities and generating functions. This course does not satisfy any major requirement, and may be taken more than once for credit. It is primarily used as training for the William Lowell Putnam Mathematics Competition. Area: Quantitative and Mathematical Sciences.
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

AS.110.302. Differential Equations and Applications. 4.0 Credits.
This is a course in ordinary differential equations (ODEs), equations involving an unknown function of one independent variable and some of its derivatives, and is primarily a course in the study of the structure of and techniques for solving ODEs as mathematical models. Specific topics include first and second ODEs of various types, systems of linear differential equations, autonomous systems, and the qualitative and quantitative analysis of nonlinear systems of first-order ODEs. Laplace transforms, series solutions and the basics of numerical solutions are included as extra topics. Prerequisites: Grade of C- or better in 110.107 or 110.109 or 110.113, or a 5 on the AP BC exam. Area: Quantitative and Mathematical Sciences.
Prerequisites: Grade of C- or better in AS.110.107 or AS.110.109 or AS.110.113 or AS.110.201 or AS.110.202 or AS.110.211 or AS.110.212, or a 5 on the AP BC exam.
Instructor(s): R. Brown
Area: Quantitative and Mathematical Sciences.

AS.110.304. Elementary Number Theory. 4.0 Credits.
The student is provided with many historical examples of topics, each of which serves as an illustration of and provides a background for many years of current research in number theory. Primes and prime factorization, congruences, Euler’s function, quadratic reciprocity, primitive roots, solutions to polynomial congruences (Chevalley’s theorem), Diophantine equations including the Pythagorean and Pell equations, Gaussian integers, Dirichlet’s theorem on primes.
Prerequisites: Grade of C- or better in (AS.110.201 or AS.110.212)
Instructor(s): J. Kong
Area: Quantitative and Mathematical Sciences.

AS.110.311. Methods of Complex Analysis. 4.0 Credits.
This course is an introduction to the theory of functions of one complex variable. Its emphasis is on techniques and applications, and it serves as a basis for more advanced courses. Functions of a complex variable and their derivatives; power series and Laurent expansions; Cauchy integral theorem and formula; calculus of residues and contour integrals; harmonic functions.
Prerequisites: Grade of C- or better in 110.202 or 110.211
Instructor(s): C. Mese
Area: Quantitative and Mathematical Sciences.

AS.110.328. Non-Euclidean Geometry. 4.0 Credits.
For 2,000 years, Euclidean geometry was the geometry. In the 19th century, new, equally consistent but very different geometries were discovered. This course will delve into these geometries on an elementary but mathematically rigorous level.
Instructor(s): M. Merling
Area: Quantitative and Mathematical Sciences.

AS.110.401. Introduction to Abstract Algebra. 4.0 Credits.
An introduction to the basic notions of modern abstract algebra and can serve as an Introduction to Proofs (IP) course. This course is an introduction to group theory, with an emphasis on concrete examples, and especially on geometric symmetry groups. The course will introduce basic notions (groups, subgroups, homomorphisms, quotients) and prove foundational results (Lagrange’s theorem, Cauchy’s theorem, orbit-counting techniques, the classification of finite abelian groups). Examples to be discussed include permutation groups, dihedral groups, matrix groups, and finite rotation groups, culminating in the classification of the wallpaper groups. Prerequisites: Grade of C- or better in 110.201 or 110.212 Area: Quantitative and Mathematical Sciences.
Prerequisites: Grade of C- or better in (AS.110.201 or AS.110.212)
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

AS.110.405. Real Analysis I. 4.0 Credits.
This course is designed to give a firm grounding in the basic tools of analysis. It is recommended as preparation (but may not be a prerequisite) for other advanced analysis courses. Real and complex number systems, topology of metric spaces, limits, continuity, infinite sequences and series, differentiation, Riemann-Stieltjes integration.
Prerequisites: Grade of C- or better in (AS.110.201 OR AS.110.212) AND (AS.110.202 OR AS.110.211)
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

AS.110.406. Real Analysis II. 4.0 Credits.
This course continues AS.110.405 with an emphasis on the fundamental notions of modern analysis. Sequences and series of functions, Fourier series, equicontinuity and the Arzela-Ascoli theorem, the Stone-Weierstrass theorem, functions of several variables, the inverse and implicit function theorems, introduction to the Lebesgue integral.
Instructor(s): J. Spruck
Area: Quantitative and Mathematical Sciences.

AS.110.407. Honors Complex Analysis. 4.0 Credits.
AS.110.407. Honors Complex Analysis. 4.00 Credits. This course is an introduction to the theory of functions of one complex variable for honors students. Its emphasis is on techniques and applications, and can serve as an Introduction to Proofs (IP) course. Topics will include functions of a complex variable and their derivatives; power series and Laurent expansions; Cauchy integral theorem and formula; calculus of residues and contour integrals; harmonic functions, as well as applications to number theory and harmonic analysis. Area: Quantitative and Mathematical Sciences. This is not an Introduction to Proofs course (IP) and may not be taken as a first proof-based mathematics course except at the discretion of the instructor. This course satisfies a core requirement of the mathematics major as a second analysis course, and is a core requirement for honors in the major.
Prerequisites: AS.110.405 OR AS.110.415
Instructor(s): B. Shiffman
Area: Quantitative and Mathematical Sciences.
AS.110.411. Honors Algebra I. 4.0 Credits.
An introduction to the basic notions of modern algebra for students with some prior acquaintance with abstract mathematics. Elements of group theory: groups, subgroups, normal subgroups, quotients, homomorphisms. Generators and relations, free groups, products, abelian groups, finite groups. Groups acting on sets, the Sylow theorems. Definition and examples of rings and ideals.
Prerequisites: Grade of C- or better in AS.110.202 OR AS.110.304 OR AS.110.113 OR AS.110.405 OR AS.110.415 OR AS.110.407 OR AS.110.413 OR AS.110.421
Instructor(s): J. Specter
Area: Quantitative and Mathematical Sciences.

AS.110.412. Honors Algebra II. 4.0 Credits.
This is a continuation of 110.411 Honors Algebra I. Topics studies include principal ideal domains, structure of finitely generated modules over them. Introduction to field theory: Linear algebra over a field. Field extensions, constructible polygons, non-trisectability: Splitting field of a polynomial, algebraic closure of a field. Galois theory: correspondence between subgroups and subfields. Solvability of polynomial equations by radicals. Prerequisites: Grade of C- or better in 110.201 or 110.212 Area: Quantitative and Mathematical Sciences.
Prerequisites: C- or better in AS.110.411
Instructor(s): C. Consani
Area: Quantitative and Mathematical Sciences.

AS.110.413. Introduction To Topology. 4.0 Credits.
Topological spaces, connectedness, compactness, quotient spaces, metric spaces, function spaces. An introduction to algebraic topology: covering spaces, the fundamental group, and other topics as time permits.
Prerequisites: Grade of C- or better in (AS.110.202 OR AS.110.211)
Instructor(s): M. Rovelli
Area: Quantitative and Mathematical Sciences.

AS.110.415. Honors Analysis I. 4.0 Credits.
This highly theoretical sequence in analysis is reserved for the most able students. The sequence covers the real number system, metric spaces, basic functional analysis, the Lebesgue integral, and other topics.
Instructor(s): H. Xu
Area: Quantitative and Mathematical Sciences.

AS.110.416. Honors Analysis II. 4.0 Credits.
Prerequisites: Grade of C- or better in AS.110.415
Instructor(s): J. Bernstein
Area: Quantitative and Mathematical Sciences.

AS.110.417. Partial Differential Equations. 4.0 Credits.
Characteristics, classification of second order equations, well-posed problems, separation of variables and expansions of solutions. The wave equation: Cauchy problem, Poisson’s solution, energy inequalities, domains of influence and dependence. Laplace’s equation: Poisson’s formula, maximum principles, Green’s functions, potential theory Dirichlet and Neumann problems, eigenvalue problems. The heat equation: fundamental solutions, maximum principles. Recommended Course Background: AS.110.405 or AS.110.415
Instructor(s): J. Luehrmann
Area: Quantitative and Mathematical Sciences.

AS.110.421. Dynamical Systems. 4.0 Credits.
This is a course in the modern theory of Dynamical Systems. Topic include both discrete (iterated maps) and continuous (differential equations) dynamical systems and focuses on the qualitative structure of the system in developing properties of solutions. Topics include contractions, interval and planar maps, linear and nonlinear ODE systems including bifurcation theory, recurrence, transitivity and mixing, phase volume preservation as well as chaos theory, fractional dimension and topological entropy. May be taken as an Introduction to Proofs (IP) course. Prerequisites: Grade of C- or better in 110.201 or 110.212 OR 110.202 or 110.211 and 110.302 Area: Quantitative and Mathematical Sciences
Prerequisites: Grade of C- or better in AS.110.201 OR AS.110.212 AND (AS.110.202 or AS.110.211) AND 110.302
Instructor(s): R. Brown
Area: Quantitative and Mathematical Sciences.

AS.110.422. Representation Theory. 4.0 Credits.
This course will focus on the basic theory of representations of finite groups in characteristic zero: Schur's Lemma, Mashcke's Theorem and complete reducibility, character tables and orthogonality, direct sums and tensor products. The main examples we will try to understand are the representation theory of the symmetric group and the general linear group over a finite field. If time permits, the theory of Brauer characters and modular representations will be introduced.
Prerequisites: Grade of C- or better in (AS.110.201 OR AS.110.212) AND (AS.110.401 OR AS.110.411)
Instructor(s): J. Morava
Area: Quantitative and Mathematical Sciences.

AS.110.423. Lie Groups for Undergraduates. 4.0 Credits.
This course is an introduction to Lie Groups and their representations at the upper undergraduate level. It will cover basic Lie Groups such as SU (2), U(n), the Euclidean Motion Group and Lorentz Group. This course is useful for students who want a working knowledge of group representations. Some aspects of the role of symmetry groups in particle physics such as some of the formal aspects of the electroweak and the strong interactions will also be discussed. Recommended Course Background: AS.110.202; prior knowledge of group theory (AS.110.401) would be helpful.
Instructor(s): S. Zucker
Area: Quantitative and Mathematical Sciences.

AS.110.427. Introduction Calculus of Variations. 4.0 Credits.
The calculus of variations is concerned with finding optimal solutions (shapes, functions, etc.) where optimality is measured by minimizing a functional (usually an integral involving the unknown functions) possibly with constraints. Applications include mostly one-dimensional (often geometric) problems: brachistochrone, geodesics, minimum surface area of revolution, isoperimetric problem, curvature flows, and some differential geometry of curves and surfaces. Recommended Course Background: Calculus III
Prerequisites: Grade of B+ or better in AS.110.201 and AS.110.211
Instructor(s): Y. Zhang
Area: Quantitative and Mathematical Sciences.

AS.110.431. Knot Theory. 4.0 Credits.
The theory of knots and links is a facet of modern topology. The course will be mostly self-contained, but a good working knowledge of groups will be helpful. Topics include braids, knots and links, the fundamental group of a knot or link complement, spanning surfaces, and low dimensional homology groups.
Instructor(s): C. McTague
Area: Quantitative and Mathematical Sciences.
AS.110.433. Introduction to Harmonic Analysis and Its Applications. 4.0 Credits.
Prerequisites: (AS.110.201 OR AS.110.212 OR EN.550.291 OR EN.553.291) AND (AS.110.202 OR AS.110.211) AND (AS.110.405 OR AS.110.415)
Instructor(s): M. Maggioni
Area: Quantitative and Mathematical Sciences.

AS.110.435. Introduction To Differential Geometry. 4.0 Credits.
This course provides the tools for classical three-dimensional physics and mechanics. This course extends these techniques to the general locally Euclidean spaces (manifolds) needed for an understanding of such things as Maxwell's equations or optimization in higher dimensional contexts, eg. in economics. The course will cover the theory of differential forms and integration. Specific topics include Maxwell's equations in terms of 4D Lorentz geometry, vector (in particular, tangent) bundles, an introduction to de Rham theory, and Sard's theorem on the density of regular values of smooth functions. The course is intended to be useful to mathematics students interested in analysis, differential geometry, and topology, as well as to students in physics and economics.
Instructor(s): J. Morava
Area: Quantitative and Mathematical Sciences.

AS.110.441. Calculus on Manifolds. 4.0 Credits.
This course extends these techniques to the general locally Euclidean spaces (manifolds) needed for an understanding of such things as Maxwell's equations or optimization in higher dimensional contexts, eg. in economics. The course will cover the theory of differential forms and integration. Specific topics include Maxwell's equations in terms of 4D Lorentz geometry, vector (in particular, tangent) bundles, an introduction to de Rham theory, and Sard's theorem on the density of regular values of smooth functions. The course is intended to be useful to mathematics students interested in analysis, differential geometry, and topology, as well as to students in physics and economics.
Instructor(s): J. Morava
Area: Quantitative and Mathematical Sciences.

AS.110.439. Introduction To Differential Geometry. 4.0 Credits.
Theory of curves and surfaces in Euclidean space: Frenet equations, fundamental forms, curvatures of a surface, theorems of Gauss and Mainardi-Codazzi, curves on a surface; introduction to tensor analysis and Riemannian geometry; theorema egregium; elementary global theorems.
Prerequisites: Grade of C- or better in (AS.110.201 or AS.110.212) and (AS.110.202 or AS.110.211)
Instructor(s): H. Lindblad
Area: Quantitative and Mathematical Sciences.

AS.110.443. Fourier Analysis. 4.0 Credits.
An introduction to the Fourier transform and the construction of fundamental solutions of linear partial differential equations.
Instructor(s): M. Maggioni
Area: Quantitative and Mathematical Sciences.

AS.110.445. Introduction to Algebraic Geometry. 4.0 Credits.
Algebraic geometry studies zeros of polynomials in several variables and is based on the use of abstract algebraic techniques, mainly from commutative algebra, for solving geometric problems about these sets of zeros. The fundamental objects of study are algebraic varieties which are the geometric manifestations of solutions of systems of polynomial equations. Algebraic geometry occupies a central place in modern mathematics and has multiple conceptual connections with diverse fields such as complex analysis, topology and number theory. This course aims to provide to an undergraduate student majoring in mathematics the fundamental background to approach the study of algebraic geometry by providing the needed abstract knowledge also complemented by several examples and applications.
Instructor(s): C. Consani
Area: Quantitative and Mathematical Sciences.
AS.110.446. Introduction to Statistical Learning, Data Analysis and Signal Processing. 4.0 Credits.
Introduction to high dimensional data sets: key problems in statistical and machine learning. Geometric aspects. Principal component analysis, linear dimension reduction, random projections. Concentration phenomena: examples and basic inequalities. Metric spaces and embeddings thereof. Kernel methods. Nonlinear dimension reduction, manifold models. Regression. Vector spaces of functions, linear operators, projections. Orthonormal bases; Fourier and wavelet bases, and their use in signal processing and time series analysis. Basic approximation theory. Linear models, least squares. Bias and variance tradeoffs, regularization. Sparsity and compressed sensing. Multiscale methods. Graphs and networks. Random walks on graphs, diffusions, page rank. Block models. Spectral clustering, classification, semi-supervised learning. Algorithmic and computational aspects of the above will be consistently in focus, as will be computational experiments on synthetic and real data. Linear algebra will be used throughout the course, as will multivariable calculus and basic probability (discrete random variables). Basic experience in programming in C or MATLAB or R or Octave. Recommended Course Background: More than basic programming experience in Matlab or R; some more advanced probability (e.g. continuous random variables), some signal processing (e.g. Fourier transform, discrete and continuous). Co-listed with EN.553.416
Prerequisites: AS.110.201
Instructor(s): M. Maggioni
Area: Quantitative and Mathematical Sciences.

AS.110.503. Undergraduate Research in Mathematics. 0.0 - 4.0 Credits.
Instructor(s): R. Brown.

AS.110.586. Independent Study. 0.0 - 4.0 Credits.
Instructor(s): J. Morava.

AS.110.587. DRP Independent Study. 1.0 Credit.
Directed Reading Program (DRP) Independent Study
Instructor(s): D. Fuentes-Keuthan
Area: Quantitative and Mathematical Sciences.

AS.110.595. Internship. 1.0 Credit.

AS.110.601. Algebra.
An introductory graduate course on fundamental topics in algebra to provide the student with the foundations for number theory, algebraic geometry, and other advanced courses. Topics include group theory, commutative algebra, Noetherian rings, local rings, modules, rudiments of category theory, homological algebra, field theory, Galois theory, and non-commutative algebras.
Instructor(s): V. Shokurov
Area: Quantitative and Mathematical Sciences.

AS.110.602. Algebra.
An introductory graduate course on fundamental topics in algebra to provide the student with the foundations for Number Theory, Algebraic Geometry, and other advanced courses. Topics include group theory, commutative algebra, Noetherian rings, local rings, modules, and rudiments of category theory, homological algebra, field theory, Galois theory, and non-commutative algebras. Recommended Course Background: AS.110.401-AS.110.402
Instructor(s): C. Consani
Area: Quantitative and Mathematical Sciences.

AS.110.605. Real Variables.
Measure and integration on abstract and locally compact spaces (extension of measures, decompositions of measures, product measures, the Lebesgue integral, differentiation, Lp-spaces); introduction to functional analysis; integration on groups; Fourier transforms.
Instructor(s): J. Bernstein
Area: Quantitative and Mathematical Sciences.

AS.110.607. Complex Variables.
Analytic functions of one complex variable. Topics include Mittag-Leffler Theorem, Weierstrass factorization theorem, elliptic functions, Riemann-Roch theorem, Picard theorem, and Nevanlinna theory. Recommended Course Background: AS.110.311, AS.110.405
Instructor(s): H. Xu.

AS.110.608. Riemann Surfaces.
Abstract Riemann surfaces. Examples: algebraic curves, elliptic curves and functions on them. Holomorphic and meromorphic functions and differential forms, divisors and the Mittag-Leffler problem. The analytic genus. Bezout's theorem and applications. Introduction to sheaf theory, with applications to constructing linear series of meromorphic functions. Serre duality, the existence of meromorphic functions on Riemann surfaces, the equality of the topological and analytic genera, the equivalence of algebraic curves and compact Riemann surfaces, the Riemann-Roch theorem. Period matrices and the Abel-Jacobi mapping, Jacobian inversion, the Torelli theorem. Uniformization (time permitting).
Instructor(s): H. Xu.

AS.110.612. Complex geometry.
Instructor(s): B. Shiffman.

AS.110.615. Algebraic Topology.
Polyhedra, simplicial and singular homology theory, Lefschetz fixed-point theorem, cohomology and products, homological algebra, Künneth and universal coefficient theorems, Poincaré and Alexander duality theorems.
Instructor(s): N. Kitchloo.

AS.110.616. Algebraic Topology.
Polyhedra, simplicial and singular homology theory, Lefschetz fixed-point theorem, cohomology and products, homological algebra, Künneth and universal coefficient theorems, Poincaré and Alexander duality theorems.
Instructor(s): E. Riehl
Area: Quantitative and Mathematical Sciences.

AS.110.617. Number Theory.
Topics in advanced algebra and number theory, including local fields and adeles, Iwasawa-Tate theory of zeta functions and connections with Hecke's treatment, semisimple algebras over local and number fields, adele geometry.
Instructor(s): C. Consani
Area: Quantitative and Mathematical Sciences.

AS.110.618. Number Theory.
Topics in advanced algebra and number theory, including local fields and adeles, Iwasawa-Tate theory of zeta functions and connections with Hecke's treatment, semisimple algebras over local and number fields, adele geometry.
Instructor(s): D. Savitt.
Lie groups and Lie algebras, classification of complex semi-simple Lie algebras, compact forms, representations and Weyl formulas, symmetric Riemannian spaces.
Prerequisites: AS.110.402
Instructor(s): C. Mese; J. Morava
Area: Quantitative and Mathematical Sciences.

AS.110.631. Partial Differential Equations I.
An introductory graduate course in partial differential equations. Classical topics include first order equations and characteristics, the Cauchy-Kowalewski theorem, Laplace's equations, heat equation, wave equation, fundamental solutions, weak solutions, Sobolev spaces, maximum principles
Prerequisites: Grade of C- or better in AS.110.605
Instructor(s): Y. Sire
Area: Quantitative and Mathematical Sciences.

AS.110.632. Partial Differential Equations II.
An introductory graduate course in partial differential equations. Classical topics include first order equations and characteristics, the Cauchy-Kowalevski theorem, Laplace's equation, heat equation, wave equation, fundamental solutions, weak solutions, Sobolev spaces, maximum principles. The second term focuses on special topics such as second order elliptic theory.
Instructor(s): J. Luehrmann.

AS.110.633. Harmonic Analysis.
Fourier multipliers, oscillatory integrals, restriction theorems, Fourier integral operators, pseudodifferential operators, eigenfunctions. Undergrads need instructor's permission.
Instructor(s): C. Sogge
Area: Quantitative and Mathematical Sciences.

AS.110.634. Algebraic Geometry.
Affine varieties and commutative algebra. Hilbert's theorems about polynomials in several variables with their connections to geometry. General varieties and projective geometry. Dimension theory and smooth varieties. Sheaf theory and cohomology. Applications of sheaves to geometry; e.g., the Riemann-Roch theorem. Other topics may include Jacobian varieties, resolution of singularities, geometry on surfaces, schemes, connections with complex analytic geometry and topology.
Instructor(s): V. Shokurov
Area: Quantitative and Mathematical Sciences.

AS.110.635. Microlocal Analysis.
Microlocal analysis is the geometric study of singularities of solutions of partial differential equations. The course will begin by introducing the geometric theory of (Schwartz) distributions: Fourier transform and Sobolev spaces, pseudo-differential operators, wave front set of a distribution, elliptic operators, Lagrangean distributions, oscillatory integrals, method of stationary phase, Fourier integral operators. The second semester will develop the theory and apply it to special topics such as asymptotics of eigenvalues/eigenfunctions of the Laplace operator on a Riemann manifold, linear and non-linear wave equation asymptotics of quantum systems, Bochner-Riesz means, maximal theorems.
Instructor(s): H. Lindblad.

AS.110.637. Functional Analysis.
Instructor(s): F. Lu.

AS.110.643. Algebraic Geometry.
Affine varieties and commutative algebra. Hilbert's theorems about polynomials in several variables with their connections to geometry. General varieties and projective geometry. Dimension theory and smooth varieties. Sheaf theory and cohomology. Applications of sheaves to geometry; e.g., the Riemann-Roch theorem. Other topics may include Jacobian varieties, resolution of singularities, geometry on surfaces, connections with complex analytic geometry and topology, schemes.
Instructor(s): X. Zheng.

AS.110.645. Riemannian Geometry.
Differentiable manifolds, vector fields, flows, Frobenius' theorem. Differential forms, deRham's theorem, vector bundles, connections, curvature, Chern classes, Cartan structure equations. Riemannian manifolds, Bianchi identities, geodesics, exponential maps. Geometry of submanifolds, hypersurfaces in Euclidean space. Other topics as time permits, e.g., harmonic forms and Hodge theorem, Jacobi equation, variation of arc length and area, Chern-Gauss-Bonnet theorems.
Instructor(s): C. Mese.

AS.110.675. High-Dimensional Approximation, Probability, and Statistical Learning.
The course covers fundamental mathematical ideas for certain approximation and statistical learning problems in high dimensions. We start with basic approximation theory in low-dimensions, in particular linear and nonlinear approximation by Fourier and wavelets in classical smoothness spaces, and discuss applications in imaging, inverse problems and PDE's. We then introduce notions of complexity of function spaces, which will be important in statistical learning. We then move to basic problems in statistical learning, such as regression and density estimation. The interplay between randomness and approximation theory is introduced, as well as fundamental tools such as concentration inequalities, basic random matrix theory, and various estimators are constructed in detail, in particular multi scale estimators. At all times we consider the geometric aspects and interpretations, and will discuss concentration of measure phenomena, embedding of metric spaces, optimal transportation distances, and their applications to problems in machine learning such as manifold learning and dictionary learning for signal processing.
Instructor(s): M. Maggioni
Area: Quantitative and Mathematical Sciences.

Instructor(s): B. Dodson.

AS.110.711. Topics in Topos Theory.
Reading course to discuss Topics in Topos Theory
Instructor(s): E. Riehl.

AS.110.712. Topics in Mathematical Physics.
Instructor(s): H. Lindblad.

AS.110.722. Topics in Homotopy Theory.
The course will focus on recent developments in homotopy theory, such as Galois theory for $E_n$ ($n \geq 2$) ring-spectra, and on connections with number theory; in particular, work of Bhatt, Hesselholt, Lurie, Scholze and others on topological Hochschild homology and its applications to geometry over the $p$-adic complex numbers.
Instructor(s): E. Riehl
Area: Quantitative and Mathematical Sciences.
AS.110.724. Topics in Arithmetic Geometry.
Topics around the subject of Arithmetic Geometry will be covered in this course.
Instructor(s): B. Smithling
Area: Quantitative and Mathematical Sciences.

AS.110.725. Topics in Analysis: Nonlinear Dispersive Equations.

AS.110.726. Topics in Analysis.
The topics covered will involve the theory of calculus of Functors applied to Geometric problems like Embedding theory. Other related areas will be covered depending on the interest of the audience.
Instructor(s): Y. Sire
Area: Quantitative and Mathematical Sciences.

AS.110.727. Topics in Algebraic Topology.
Instructor(s): N. Kitchloo.

AS.110.728. Topics in Algebraic Topology.
Instructor(s): N. Kitchloo.

AS.110.731. Topics in Geometric Analysis.
Instructor(s): Y. Wang.

AS.110.733. Topics in Alg Num Theory.
Instructor(s): Y. Wang.

AS.110.735. Topics in Hodge Theory.
Instructor(s): C. Mese; R. Brown; S. Zucker.

AS.110.737. Topics in Partial Differential Equations.
Instructor(s): V. Shokurov.

AS.110.738. Topics in Partial Differential Equations.
Instructor(s): V. Shokurov.

AS.110.742. Topics in Partial Differential Equations.
In this course we will be discussing some dispersive evolution equations, primarily the nonlinear Schrodinger equation. Topics will include well-posedness theory, conservation laws, and scattering. The course will be accessible to students who have not taken graduate partial differential equations or functional analysis.
Instructor(s): J. Spruck.

AS.110.749. Topics in Differential Geometry.
In this class, we will study Aaron Naber and Jeff Cheeger’s recent result on proving codimension four conjecture. We plan to talk about some early results of the structure on manifolds with lower Ricci bound by Cheeger and Colding. We will prove quantitative splitting theorem, volume convergence theorem, and the result that almost volume cone implies almost metric cone. Then we will discuss regularity of Einstein manifolds and the codimension four conjecture.
Instructor(s): J. Bernstein
Area: Quantitative and Mathematical Sciences.

AS.110.755. Topics in Fluid Dynamics.
Graduate students only.
Instructor(s): J. Bernstein
Area: Quantitative and Mathematical Sciences.

AS.110.756. Topics in Algebra.
This will be a course in commutative algebra. Topics may include: Noetherian rings and modules, the Nullstellensatz, Hilbert basis theorem, localization, integralty, Noether normalization, primary decomposition, DVRs, Dedekind domains, dimension theory, smoothness and regularity, and homological methods.
Instructor(s): C. Consani
Area: Quantitative and Mathematical Sciences.

AS.110.761. Topics in Topology.
Instructor(s): N. Kitchloo
Area: Quantitative and Mathematical Sciences.

AS.110.764. Topics in Algebraic Geometry.
Topics courses are restricted to graduate students only.
Instructor(s): J. Bernstein.

AS.110.790. Seminar in Complex Geometry.
Presentations of current research papers by faculty, graduate students and invited guest speakers. For graduate students only.
Instructor(s): B. Shiffman; H. Xu
Area: Quantitative and Mathematical Sciences.

Presentations of current research papers by faculty, graduate students and invited guest speakers. For graduate students only.
Instructor(s): J. Bernstein
Area: Quantitative and Mathematical Sciences.

AS.110.793. Seminar in Topology.
For graduate students only. Presentations of current research papers by faculty, graduate students and invited guest speakers.
Instructor(s): N. Kitchloo
Area: Quantitative and Mathematical Sciences.

AS.110.794. Seminar in Category Theory.
Presentations of current research papers by faculty, graduate students and invited guest speakers. For graduate students only.
Instructor(s): E. Riehl
Area: Quantitative and Mathematical Sciences.

AS.110.795. Data Science Seminar.
Presentations of current research papers by faculty, graduate students and invited guest speakers. For graduate students only.
Instructor(s): M. Maggioni
Area: Quantitative and Mathematical Sciences.

AS.110.798. Seminar in Number Theory.
Presentations of current research papers by faculty, graduate students and invited guest speakers. For graduate students only.
Instructor(s): B. Smithling.

AS.110.800. Independent Study-Graduates.
Instructor(s): J. Murphy
Area: Quantitative and Mathematical Sciences.

AS.110.801. Thesis Research.
Instructor(s): Staff.
**Cross Listed Courses**

**Applied Mathematics Statistics**
EN.553.738. High-Dimensional Approximation, Probability, and Statistical Learning. 3.0 Credits.

The course covers fundamental mathematical ideas for certain approximation and statistical learning problems in high dimensions. We start with basic approximation theory in low-dimensions, in particular linear and nonlinear approximation by Fourier and wavelets in classical smoothness spaces, and discuss applications in imaging, inverse problems and PDE's. We then introduce notions of complexity of function spaces, which will be important in statistical learning. We then move to basic problems in statistical learning, such as regression and density estimation. The interplay between randomness and approximation theory is introduced, as well as fundamental tools such as concentration inequalities, basic random matrix theory, and various estimators are constructed in detail, in particular multi scale estimators. At all times we consider the geometric aspects and interpretations, and will discuss concentration of measure phenomena, embedding of metric spaces, optimal transportation distances, and their applications to problems in machine learning such as manifold learning and dictionary learning for signal processing.

Instructor(s): M. Maggioni.

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**Medicine, Science, and the Humanities**

http://krieger.jhu.edu/msh

This is an interdisciplinary, humanities-based major using a cultural and historical context to explore scientific inquiry and the roots of medicine. The medicine, science, and the humanities major is ideal for students who plan to pursue careers in the health professions as well as those interested in issues of importance to science and medicine, and students who plan to pursue graduate work in a range of humanities, social science, or professional disciplines.

**MSH Major Goals and Objectives**

**Goal**

Medicine, science, and humanities majors will develop an interdisciplinary understanding of the cultural and historical roots of scientific inquiry and medicine, with the ability to apply these precepts to contemporary life.

**Objectives**

MSH majors will:

- Gain an introductory awareness of theory, interpretation, and methods in a specific humanistic topic related to science and medicine
- Acquire and develop skills of interpretation and analysis in a specific humanities discipline by focusing on primary and secondary sources such as literature, imagery, film, artifacts, and commentary
- Acquire fundamental skills of writing and oral presentation, emphasizing clear and logical exposition to enhance student readiness for subsequent graduate school, professional school, or the workforce
- Acquire knowledge and experience in the natural sciences
- Understand the advantages of multiculturalism through intermediate mastery of a language beyond English

**Affiliated Humanities Departments**

- Anthropology (http://anthropology.jhu.edu)
- Classics (http://classics.jhu.edu)
- English (http://english.jhu.edu)
- German and Romance Languages and Literatures (http://grll.jhu.edu)
- History (http://history.jhu.edu)
- History of Art (http://arthist.jhu.edu)
- History of Science and Technology (http://host.jhu.edu)
- Humanities Center (http://humctr.jhu.edu)
- Near Eastern Studies (http://neareast.jhu.edu)
- Philosophy (http://philosophy.jhu.edu)
- The Writing Seminars (http://writingseminars.jhu.edu)

**Major Requirements**

**Introductory Level**

- An introduction to the medical humanities course (usually AS.145.101)
- One course focusing on classic scientific and medical texts
  - Examples: History of Medicine, History of Modern Medicine, or Great Books at Hopkins II: The Sciences
- Other courses may apply with approval from the director of undergraduate studies

**Required Core Humanities Courses**

- At least 4 courses totaling at least 12 credits in one, pre-approved humanities department
- 6 credits must be at the 300-level or higher
- Approved humanities departments: Anthropology, Classics, English, German and Romance Languages and Literatures, History, History of Art, History of Science and Technology, Humanities Center, Near Eastern Studies, Philosophy, and the Writing Seminars

**Foreign Language**

- Through the intermediate level (second year at the college-level)

**Additional Courses in the Sciences and the Humanities**

- At least 6 courses totaling 18 credits in sciences and humanities; at least 2 of these courses must be in the humanities and at least 2 must be science courses. Of the 6 courses, 4 must be at the 200-level or higher

**AS.145.101** Death and Dying in Art, Literature, and Philosophy. 3
Introduction to Medical Humanities

or **AS.145.103** Men, Women, and Melancholy: Premodern Physiologies of Madness

or **AS.145.104** Science, Medicine, Media

One course focusing on classic scientific and medical texts 3

Four courses in one pre-approved humanities department *

Foreign language through the intermediate level 12-18

Six additional courses in the humanities and sciences ** 18+

Two must be in the humanities with POS-Tag MSCH-HUM

Two must be in the sciences

* Anthropology, Classics, English, German and Romance Languages and Literatures, History, History of Art, History of Science and Technology, Humanities Center, Near Eastern Studies, Philosophy, and the Writing Seminar. Six credits must be at the 300-level or higher.

** Four must be at the 200-level or higher.
# Sample Program

A typical program might include the following sequence of courses (note, this example plan emphasizes science):

**Freshman**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
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<tbody>
<tr>
<td>AS.145.101 Death and Dying in Art, Literature, and Philosophy: Introduction to Medical Humanities (Or other approved 100 level course.)</td>
<td>3 Foreign language</td>
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<th>Fall Credits</th>
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<tbody>
<tr>
<td>Foreign language</td>
<td>4 Natural science course at the 100 level</td>
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<th>Fall Credits</th>
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<tr>
<td>Natural science course at the 100 level</td>
<td>3 Humanities elective in one pre-approved department at any level</td>
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**Sophomore**

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<td>One course focusing on classic scientific and medical texts</td>
<td>3 Foreign language</td>
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<tr>
<td>Foreign language</td>
<td>3 Natural science elective at the 200 level</td>
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<tr>
<td>Natural science course at the 200 level</td>
<td>3 Humanities elective in one pre-approved department at any level</td>
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**Junior**

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<th>Fall Credits</th>
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<tr>
<td>Humanities elective in one pre-approved department at the 300-400 level</td>
<td>3 Humanities elective in one pre-approved department at the 300-400 level</td>
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**Senior**

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<th>Fall Credits</th>
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<td>200+ level Humanities elective with POS-Tag MSCH-HUM</td>
<td>3 200+ level Humanities elective with POS-Tag MSCH-HUM</td>
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Total Credits: 50

* Examples of current choices include: AS.150.219, AS.360.134, AS.140.105, and AS.140.106

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## Honors in the Major

Honors will be offered as an option to juniors with a minimum GPA of 3.50 in major requirements. Honors projects will be a one-semester endeavor, typically aiming toward an original thesis paper (or equivalent scholarly or creative work) approximately 20-25 pages in length, whose topic is closely related to the student's humanities core area. Thesis projects may be supervised by a faculty member in the student's core area, or by another faculty member with expertise relevant to the topic.

In either case the supervisory/mentoring role will be by arrangement between the student, MSH advisors, and the faculty member being solicited. All topics and supervisors are to be approved by the Director of Undergraduate Studies. Juniors interested in the pursing honors option must apply with the Director of Undergraduate Studies before Fall of the senior year. The application requires development of an approved research proposal with an accompanying mentorship plan.

While writing the thesis, students may enroll in the Independent Research course (AS 145.511, 1-3 credits). These credits are taken in addition to the 12 credits of the normal major requirements and do not count as an elective or advanced course.

## Additional Course Information

### Study Abroad

Courses taken abroad count toward the major only if approved by the director of undergraduate studies in consultation with your adviser. This should be arranged prior to travel.

### Thinking About Pre-Med?

Johns Hopkins offers an undergraduate pre-med program, but it is not a major. It is an advising track program through the Office of Pre-Professional Advising (http://web.jhu.edu/prepro). Any Johns Hopkins undergraduate student pursuing any major may also pursue the pre-med advising track.

The pre-professional advisers work with the students, providing them with academic advising, assistance in selecting the proper courses, and help with the medical school application process. Please note that the MSH major does not fulfill all of the requirements for a pre-med course of study. Speak with your adviser for more information.

### Faculty

#### Directors

Charles Wiener  
Professor of Medicine and Physiology; Director, Medicine, Science, and the Humanities

Mitchell Merback  
Professor, History of Art; Director, Medicine, Science and the Humanities

#### Professor

Bernadette Wegenstein  
Professor of Media Studies, Department of German and Romance Languages and Literatures

**Assistant Professor**

Joshua Smith  
Assistant Professor, Classics

**Visiting Professor**

Evelyn Ender  
Visiting Professor, Department of German and Romance Languages and Literatures

**For current course information and registration go to https://sis.jhu.edu/classes/**
Courses

AS.145.101. Death and Dying in Art, Literature, and Philosophy: Introduction to Medical Humanities. 3.0 Credits.
This team-taught course offers an interdisciplinary introduction to the university's new concentration in "Medicine, Science, and Humanities." The themes of death, dying, and the treatment of the dead are explored in their changing historical, anthropological, philosophical, literary, art historical and medical dimensions. Open to freshmen, sophomores, and upperclass Medicine, Science, and Humanities majors.
Instructor(s): E. Ender; M. Merback; W. Stephens
Area: Humanities
Writing Intensive.

AS.145.102. The Cosmic Imagination: How Literature Changes Our Understanding of the Universe. 3.0 Credits.
Since time immemorial humankind has looked to the skies for clues as to our origins, our destiny, and the nature of existence itself. In some ways, one of the hallmarks of western science has been a story of viewing the cosmos in ever-greater clarity and detail. Yet the very nature of the universe—its massive size, the distance and obscurity of its farthest reaches—requires the active intervention of our imaginations to picture it, no matter how powerful the technologies we use. In this course we will look at how western cultures from the middle ages to the present have deployed the literary and philosophical imagination to try to grasp the ungraspable, and how those attempts in some cases helped prepare intellectuals and scientists to make very real advances in understanding the universe.
Prerequisites: Students may not take and receive credit for AS.145.102 and AS.211.102.
Instructor(s): W. Egginton
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.145.103. Men, Women, and Melancholy: Premodern Physiologies of Madness. 3.0 Credits.
Definitions of madness change over time. From Antiquity through the Early Modern period, Melancholia was the predominant form of mental illness, thought to be caused by an imbalance in the bodily humors, resulting in an excess of black bile. The disturbed physiology adversely affected the imagination, which, with memory and intellect, was one of the three functions of the soul. Only gradually did imagination come to be identified with deliberate creativity: from about 1400 to 1800, there were two stereotypical victims of melancholia: male intellectuals and female witches. The disruption of society by witch-hunting was even more radical than the rise of the "man of genius." At stake were definitions of psychology ("science of the soul") and reality (whether witches and demons interacted "in the body" or only "in the imagination"). Readings from Plato to Freud.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.145.104. Science, Medicine, Media. 3.0 Credits.
Much of our understanding of science and medicine is filtered through what we casually refer to as "the media": newspapers, magazines, television shows, films, and electronic social media. But the scientific world relies on its own media to produce and circulate knowledge: from scientific journals and conferences, to agar plates and petri dishes, cloud chambers and electrophoresis gels. Medical technologies from the stethoscope to the echocardiogram likewise mediate the perception of the body in health and disease, and increasingly our own understanding and perception of our bodies and our health is mediated via screens, scans, images — without which we cannot "imagine" our selves anymore. Students will learn several tools to critically assess the technologies that mediate our knowledge of our own bodies and the broader world.
Instructor(s): B. Wegenstein; J. Greene
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.145.110. Discover Hopkins: Exploring Medical Careers. 1.0 Credit.
Many people are unaware of the diversity of medical and health careers. This program introduces scientific knowledge and promotes awareness of a variety of medical and health careers, for example, multiple specialties of physicians, physician assistant, nurse careers, professional therapists (physical, occupational, respiratory, radiation), clinical nutritionist, pharmacist, genetic counselor, medical laboratory scientist, veterinarian, clinical trial professionals, clinical social worker, and public health related careers. Taught by diverse healthcare professionals currently working at Johns Hopkins Hospital System, students will gain meaningful scientific knowledge and practical career knowledge by participating in lectures, labs, hands-on/simulation activities, interviews, and workshops.
Instructor(s): Y. Li
Area: Natural Sciences.

AS.145.201. Clues: Unreasoning the Medical Mystery. 3.0 Credits.
Pioneering authors of detective fiction, including Edgar Allen Poe, Arthur Conan Doyle, and Pauline Hopkins, often used medical doctors and themes in their mystery plots. It’s no coincidence that medicine and crime fiction share a vocabulary of clues, evidence, and diagnosis. The mystery genre was integrally tied to the rise of scientific medicine as a respected profession. Indeed, classic detective stories are practically propaganda for the scientific method, showing readers how the powerful tools of observation and inference can solve any problem. Over the course of the 20th century, not only doctors, but also psychologists, social scientists and historians adopted the authoritative stance of the detective in constructing or reconstructing facts. However, as we study Sherlock Holmes and his modern protégés, such as TV doctor Gregory House, we will analyze how "medical mystery" narratives can limit our thinking about problems and solutions in medicine. We will consider post-modern detective stories that offer alternatives to the "Holmsian" model for understanding the complex clinical realities of today.
Instructor(s): A. Puglionesi
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.145.301. Naturalizing the Human Body in Early Modern France: the Confrontation of Literature, Science and Politics. 3.0 Credits.

Literature in early modern Europe was essential to the naturalizing of the human body, a partner in the reshaping of the cultures and disciplines around it. This course looks at several shifts within major literary works of the 17th and 18th centuries, a time of great intellectual upheaval, a moment when the interpenetration of the literary, scientific and political cultures was such that “art for art’s sake” would have been considered irresponsible. The primary goals of the course are to allow students to understand the intrinsic literary value of the texts, but equally to show how literary activity, both of writing and of reading, was the vehicle for the elaboration of the modern mind set. We will focus on three cases: vision, the body’s “economy” and Body of the State, and the “scandal” of smallpox vaccination. Texts will include, for example, extracts from: Newton’s Opticks, Cyrano de Bergerac’s The States and Empires of the Sun, Montesquieu’s Persian Letters and Spirit of the Laws, Voltaire’s English Letters, Rousseau’s The New Eloise, Laclos’ Dangerous Liaisons, Guillotine’s text inventing the guillotine. For more information, please see the full course description at http://www.wilda.org/Courses/CourseVault/Undergrad/Naturalizing/Description.html. This course and texts will be in English, but readings will also be available in French.

Instructor(s): W. Anderson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.145.330. Insomnia in Modern Literature, Philosophy, and Film. 3.0 Credits.

Insomnia, while being defined and treated as a sleep disorder in the field of medical discourse, has attracted other kinds of interest, too. Philosophers and writers have been intrigued by insomnia since antiquity. From their perspectives, the capability of being sleepless not only distinguishes humankind from animals but testifies to human awareness in its ceaseless striving for wisdom and truth. Insomnia appears as vigilance, an exalted state of mind well suited for philosophic reflection, intense scrutiny of the world, and sudden inspiration. Yet these moments of sustained productivity are inextricably bound to insomnia’s “dark” side, the fact that sleeplessness tortures the body and exhausts the mind, haunts the weary wakeful and makes him meditate on insomnia. Thus sleeplessness turns into an obsession with the potential to transform thinking into endless introspection, self-absorbed melancholy, if not misanthropic sarcasm. This course will examine representations of insomnia in modern philosophy, literature and film. We will analyze to what extent interpretations of sleeplessness in the humanities differ from those in medical and scientific discourse. Particular emphasis will be placed on the relationship between insomnia, subjectivity, thinking, and writing. Authors and films to be considered will include among others Emanuel Lövinas, Emil Cioran, Franz Kafka, Samuel Beckett, Ernest Hemingway, F. Scott Fitzgerald, Djuna Barnes, Gabriel García Márquez and Insomnia (2002; Christopher Nolan).

Instructor(s): A. Krauss
Area: Humanities, Social and Behavioral Sciences.

AS.145.401. In Search of the Human: Ways of Remembering. 3.0 Credits.

Studying narrative as a way of understanding the complex emotions associated with illness and the lifecycle has long been recognized as an important part of clinical training. This course focuses on autobiographical memory as a particularly important part of forming a personal narrative. These memories can offer foundations on which to build an approach to life and its challenges, and they can also be constraining. The course readings will illustrate how authors of fiction and scientists have grappled with the task of remembering and studied the configurations of autobiographical recollection.

Instructor(s): E. Ender; L. Wissow
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.145.502. Medicine, Science & the Humanities Internship. 3.0 Credits.

An internship in Medicine, Science & the Humanities approved by the director of the program.

Instructor(s): C. Wiener
Area: Humanities, Social and Behavioral Sciences.

AS.145.510. Medicine, Science & the Humanities Independent Research. 1.0 Credit.

This course is for students in the Medicine, Science & the Humanities doing independent research.

Instructor(s): A. Motion, C. Wiener
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.145.511. Medicine, Science & the Humanities Independent Research. 1.0 - 3.0 Credits.

This class is for the MSH majors completing their research project. Instructor approval required.

Instructor(s): C. Wiener
Area: Humanities, Social and Behavioral Sciences.

Cross Listed Courses

History of Art

AS.010.403. Art and Science in the Middle Ages. 3.0 Credits.

This course investigates the intersections of art and science from the Carolingian period through the fourteenth century and the historical role images played in the pursuit of epistemic truths. Science – from the Latin scientia, or knowledge – in the Middle Ages included a broad range of intellectual pursuits into both the supernatural and natural worlds, and scholars have classified these pursuits in various ways (i.e. experimental or theoretical science, practical science, magic, and natural philosophy).

A particular focus of this seminar will be placed on the assimilation of Greek and Islamic scientific advances in cartography, cosmology, and optical theory into the Latin theological tradition.

Instructor(s): C. Lakey
Area: Humanities
Writing Intensive.

Classics

AS.040.152. Medical Terminology. 3.0 Credits.

This course investigates the Greek and Latin roots of modern medical terminology, with additional focus on the history of ancient medicine and its role in the development of that terminology.

Instructor(s): J. Smith
Area: Humanities.
AS.040.238. **Freshman Seminar: Magic and Miracles from Antiquity to the Renaissance. 3.0 Credits.**
This freshman seminar will explore concepts of magic and miracles and their different forms from ancient Greece and Rome and early Christianity through the Middle Ages up to the Renaissance. Dean's Prize Teaching Fellowship Course.
Instructor(s): M. Mueller
Area: Humanities
Writing Intensive.

AS.040.241. **The Greeks and Their Emotions. 3.0 Credits.**
This seminar is meant as an introduction to the study of ancient emotions, with a particular emphasis on how the Greeks of the Archaic, Classical and Hellenistic periods conceptualized, portrayed and lived their emotions through linguistic, literary and artistic expression. After an analysis of how the ancient Greek terminology for the emotions differs from our own, we shall focus on the phenomenon of emotion as deeply rooted in the physical body, and in light of this we will contemplate (and question) its universality. Texts will be read in translation. No knowledge of ancient Greek required.
Instructor(s): M. Asuni
Area: Humanities
Writing Intensive.

AS.060.108. **Time Travel. 3.0 Credits.**
Why is time travel such a consistent and perplexing theme in literature and film over the last 150 years? Why is modernity so concerned with peaking backwards or forwards? This course will examine the history of time-travel fiction, from its beginning in utopian fiction through its box-office dominance in the 1980s, and into today. Writers will likely include Mark Twain, Edward Bellamy, Harold Steele Mackay, Ray Bradbury, Robert Heinlein, and Philip K. Dick. Movies will include *The Terminator*, *Back to the Future*, and *Primer*.
Instructor(s): J. Rosenthal
Area: Humanities
Writing Intensive.

AS.060.123. **Freshman Seminar: Prophecy After Science. 3.0 Credits.**
This course explores the history of prophecy from ancient Greek and Judaic sources to current intimations of technological singularity and ecological doom. We will focus on the influence of prophecy on the rise of science (and vice-versa). Readings will include texts by William Shakespeare, Francis Bacon, Mary Shelley, and Philip K. Dick.
Instructor(s): W. Miller
Area: Humanities
Writing Intensive.

AS.060.127. **Muslim Science Fiction. 3.0 Credits.**
This course will explore the wondrous and mysterious world of Islamic Sci-Fi. Writers of Muslim Sci-Fi have asserted a long tradition of speculative fiction and fantasy dating back to the 13th century. We will look into this literary history, beginning with earlier texts like The Arabian Nights, al-Qizwini's alien story Awaj bin Anfaq and Roquia Hussain's Sultana's Dream all the way through to modern texts like G. Willow Wilson's Alif the Unseen and Saladin Ahmed's Throne of the Crescent Moon. We will ask how this genre, as opposed to realism, might enable these writers to productively tackle themes of history, science, belief, and the politics of belonging and difference. We will pair our Muslim readings with more canonical science fiction works, such as Mary Shelley's Frankenstein, H.G. Wells’ The Time Machine, and more recently, Kazuo Ishiguro's Never Let Me Go, to think through the relationship of the SF writer to a particular cultural moment. We will also look at writers of afrofuturism and magical realism, like Octavia Butler and Gabriel García Márquez, to think about how other writers of color have employed fantasy and the fantastical, and to what ends.
Instructor(s): N. Hashem
Area: Humanities
Writing Intensive.

**History**

AS.100.205. **Freshman Seminar: Health, Healing, and Medicine in Africa. 3.0 Credits.**
A freshman seminar introducing students to the history of health, healing, and forms of medical practice in Africa over the last two centuries.
Instructor(s): P. Larson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.291. **Medicine in an Age of Empires, 1500-1800. 3.0 Credits.**
How did medicine emerge as a distinctive body of knowledge and a profession in the early modern period? The answers lie in the histories of disease, empire, and global commerce.
Instructor(s): Z. Dorner
Area: Humanities, Social and Behavioral Sciences.

AS.100.381. **Religion, Medicine, and the Mind in Japan. 3.0 Credits.**
This seminar explores the relationship between religion and medicine in treating disorders of the mind and soul throughout Japanese history. We will consider such topics as animal spirit possession, Buddhism, family-based care, psychotherapy, gender, and social withdrawal.
Instructor(s): H. Kim
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**Near Eastern Studies**

AS.130.259. **Ancient Science. 3.0 Credits.**
A survey of scientific practices and technological innovations in the ancient world, including astronomy, medicine, law, and divination. Special attention will be devoted to the relationship between magic and science during the periods covered.
Instructor(s): P. Delnero
Area: Humanities, Social and Behavioral Sciences.

**History of Science Technology**

AS.140.105. **History of Medicine. 3.0 Credits.**
Course provides an overview of the medical traditions of six ancient cultures; the development of Greek and Islamic traditions in Europe; and the reform and displacement of the Classical traditions during the Scientific Revolution.
Instructor(s): G. Pomata
Area: Humanities, Social and Behavioral Sciences.
AS.140.115. Freshman Seminar: Artificial Humans. 3.0 Credits.
Looking at the history of attempts to augment or construct human beings, the course will explore the role of technology in molding human existence and shaping the definition of humanity.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.146. History of Public Health in East Asia. 3.0 Credits.
This course examines the history of disease, epidemics, and public health responses in East Asia from the 17th-20th centuries. This public health history emphasizes the interactions, connections, and comparisons among China, Japan, Korea, and Taiwan.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.163. Jungle Doctors: Medical Missions in Africa from David Livingstone to Paul Farmer. 3.0 Credits.
Freshman seminar using a variety of primary and secondary sources, students will explore the motivations and activities of expatriates practicing medicine in Africa from the 19th century to the present.
Instructor(s): J. Cummiskey
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.165. Enlightenment Science Through Brilliant Books. 3.0 Credits.
Course explores the brilliant scientific and philosophic achievements of the 18th-century intellectual movement known as the Enlightenment through the reading of a selection of key authors (Voltaire, Franklin, the great Encyclopedists...). Includes introduction to research method and writing in the humanities.
Instructor(s): J. Richard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.166. Public Health in East Asia Through Films & Documentaries. 1.0 Credit.
This course uses contemporary films and documentaries to address issues in public health in East Asia, past & present. Topics covered include medicine in turn-of-the-twentieth century Japan and China, revolutionary medicine, STDS, mental illness, HIV/AIDS in China, industrial pollution, the politics of universal health care insurance, and pandemics in East Asia.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences.

AS.140.302. Rise Of Modern Science. 3.0 Credits.
Survey of important achievements in modern science from Newton to the Hubble Space Telescope, with topics drawn from physics, chemistry, biology, astronomy, and geology. Examines how science has shaped the modern world.
Instructor(s): J. Mercelis; S. Kingsland
Area: Humanities, Social and Behavioral Sciences.

AS.140.313. Psychopolitics: Science, Mind, and Society. 3.0 Credits.
This course explores the history of psychiatry and the mind sciences as social and political institutions in the United States, from the country’s founding to the present. Each class meeting will explore a set of “alternative facts” emerging in the setting of a landmark political dispute in US history. Students will read, discuss, and research claims made by competing scientific experts about who should participate in American society and to what extent. Overall, the course is geared toward students interested in making sense of the exchange between scientific knowledge and social politics.
Instructor(s): S. Scharff
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.321. Scientific Revolution. 3.0 Credits.
Explore how the Western understanding of nature changed between 1500 and 1720 through the works of astronomers and astrologers, naturalists and magi, natural philosophers and experimentalists, doctors and alchemists & others.
Instructor(s): M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

AS.140.343. What it Means to be Human: Perspectives in the History of Anthropology, 1860-1995. 3.0 Credits.
This course explores the changing scientific, social, and cultural ideas that shaped how anthropologists and other scholars approached the study of human beings from the mid-nineteenth through the twentieth centuries.
Instructor(s): A. Link
Area: Humanities, Social and Behavioral Sciences.

AS.140.345. Animal Minds: Beyond the Black Box. 3.0 Credits.
How do migratory birds and fish find their way home? Do honeybees communicate using a “dance language”? Do chimpanzees have mental lives akin to those of human beings? How do scientists attempt to answer such questions, and why was the “animal mind” a taboo for over 50 years in American science? Focusing on ethology and psychology from Darwin to the present, this course examines the history of the study of animal cognition and behavior. A major emphasis throughout the course will be on the question of animal consciousness from the late-19th through the 20th century.
Instructor(s): R. Nash
Area: Humanities, Social and Behavioral Sciences.

AS.140.346. History of Chinese Medicine. 3.0 Credits.
Students will study the most recent anthropological, philosophical, and historical scholarship on medicine in traditional and modern Chinese society. They will approach the topic from several angles including medical pluralism, the range of healers, domestic and literate medicine, gender, emergence of new disciplines, public health and the history of disease. The course relies on secondary sources and primary sources in English translation. Cross-listed with East Asian Studies.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.140.357. Science Fiction Movies in the East and West. 3.0 Credits.
What is a science fiction (SF) movie? How did SF movies and developments in science and technology influence each other during the twentieth century? What is the use of SF movies for societies? And why are SF movies much more popular in some countries than in others? By watching and analyzing classic and contemporary SF movies from the US, the Soviet Union, Japan, China, and other countries, we will search for answers to these questions. Special emphasis will be given to analyzing how historical, political, and cultural environments in different countries have influenced the production and acceptance of SF movies.
Instructor(s): D. Kim
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.370. History of Mental Illness and Psychiatry in Modern West. 3.0 Credits.
This course will be an introduction to the history of "madness" in modern Europe and America. In particular, it will examine the ideas that have shaped perceptions of madness, insanity, and mental illness; the changing experiences of those afflicted; the development of those professions designed to look after those deemed mad, insane, and mentally ill; and the social and cultural assumptions behind treatments, policies, and public opinions.
Instructor(s): J. Ballenger
Area: Humanities, Social and Behavioral Sciences.

AS.140.382. Plagues and Societies in World History. 3.0 Credits.
This course examines some of the most notable epidemics in world history from the Black Death to Ebola in 2014. Topics include the origins of epidemic diseases; the relations between epidemics and warfare, empires, and trade; and the sociocultural underpinnings of disease response.
Instructor(s): K. Arner
Area: Humanities, Social and Behavioral Sciences.

AS.140.390. Science and Technology in Latin America. 3.0 Credits.
The course surveys the development of western science and technology in Hispanic America (1492 to the present). We begin studying the hybridization of scientific practices between European and Native American cultures during the early colonial era and end with the transfer of technologies and industrialization of the 20th century. We emphasize the role on science and technology in state formation, the acculturation of foreign ideas in colonial and postcolonial societies, and the role of intellectual elites in modernization programs.
Instructor(s): M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

AS.140.398. Godzilla and Fukushima: Japanese Environment in History and Films. 3.0 Credits.
Juxtaposing Japanese environmental history and its reflection in popular media, the course will explore the intersection between technology, environment, and culture. The course will be accompanied by relevant movie screenings.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.411. Senior Research Seminar. 2.0 Credits.
Instructor(s): J. Mercelis; M. Portuondo
Area: Humanities, Social and Behavioral Sciences.

AS.140.447. Science and the City. 3.0 Credits.
This seminar explores the nature and growth of urban scientific communities from Victorian Manchester, through geographic growth clusters such as Silicon Valley and Route 128, to new eco-cities in China and Abu Dhabi.
Instructor(s): J. Mercelis; R. Kargon; S. Leslie
Area: Humanities, Social and Behavioral Sciences.

Philosophy

AS.150.136. Philosophy & Science: An Introduction to Both. 3.0 Credits.
Philosophers and scientists raise important questions about the nature of the physical world, the mental world, the relationship between them, and the right methods to use in their investigations of these worlds. The answers they present are very different. Scientists are usually empiricists, and want to answer questions by experiment and observation. Philosophers don't want to do this, but defend their views a priori. Why? Can both be right? Readings will present philosophical and scientific views about the world and our knowledge of it. They will include selections from major historical and contemporary figures in philosophy and science. This course has no prerequisites in philosophy or science.
Instructor(s): P. Achinstein
Area: Humanities, Natural Sciences.

AS.150.182. What is Science?. 3.0 Credits.
A philosophical introduction to very basic questions about scientific reasoning, its scope and limits. Is there a universal scientific method? Can science really explain everything, anything? Must everything be proved in science? Is science incompatible with religion? Readings will be from scientists and philosophers who have thought about these issues from Descartes and Newton to the present. No prerequisites either in philosophy or science.
Instructor(s): P. Achinstein
Area: Humanities, Natural Sciences.

AS.150.219. Introduction to Bioethics. 3.0 Credits.
Introduction to a wide range of moral issues arising in the biomedical fields, e.g. physician-assisted suicide, human cloning, abortion, surrogacy, and human subjects research. Cross-listed with Public Health Studies.
Instructor(s): H. Bok
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.150.245. Introduction to Philosophy of Mind. 3.0 Credits.
This is an introduction to the central problems of philosophy of mind: the mind-body problem and the problem of self-knowledge. Of particular interest in contemporary work is the relation of mind and brain and whether, or how, we acquire self-knowledge.
Instructor(s): E. Taylor
Area: Humanities.

AS.150.431. Introduction to Philosophy of Science. 3.0 Credits.
Scientific knowledge plays an important role in human understanding. What makes something scientific? For that matter, what is a scientific explanation? Philosophers have long reflected on the nature of science and the way it shapes our conception of the universe. In this course, we will explore topics at the intersection of philosophy and science, including scientific explanation, laws of nature, the problem of induction, and reductionism. This course presupposes no philosophical or scientific background.
Instructor(s): P. Achinstein; R. Bett
Area: Humanities.
AS.150.454. The Value of Humanity. 3.0 Credits.
Are human beings distinctively valuable? What makes us valuable? And how should we respond to the value of human beings? The course is divided into four parts. The first part takes up questions about the basis of human value. We consider various proposals, including Kant’s, about the valuable feature or capacity of human beings. Are we valuable in virtue of having a good will, in virtue of being agents, in virtue of being valuers, or something further? The second part takes up questions about the explanation of the value of human beings. Does the proposed feature make us valuable because it instantiates a simple value property, making us valuable in ourselves, or simpliciter? We consider whether the notion of value simpliciter is a notion we fully understand, or need. Does the proposed feature make us valuable because it makes us good-for something or someone? Who or what does it make us good-for? Or again, does the proposed feature make us such that we are objects of an appropriate attitude or practical stance? If so, what is the attitude or stance? The third part of the course takes up normative questions about the appropriate mode of responding to human beings. We consider whether it makes sense to say that human beings are “ends-in-themselves,” and what it would mean to treat a person as an end-in-itself. We also consider various accounts of respect. A guiding question is whether human beings are the only appropriate objects of respect, or whether we can respect other beings, and even artifacts. The fourth part of the class applies what we have learned so far to related topics: to the question of whether human life or existence is valuable, and conversely, whether death is disvaluable. We consider, albeit briefly, the value of human beings in relation to the value of animals. And we ask about the role of Kantian notions like dignity in applied contexts, so that highly philosophical considerations about value are shown to have real-world bearing.
Instructor(s): L. Theunissen
Area: Humanities.

AS.150.474. Justice and Health. 3.0 Credits.
Course will consider the bearing of theories of justice on health care. Topics will include national health insurance, rationing and cost containment, and what justice requires of researchers in developing countries.
Instructor(s): H. Bok
Area: Humanities.

AS.150.476. Philosophy and Cognitive Science. 3.0 Credits.
This term's topic will be "cognitive penetration". Can what you believe change how things look and sound? For example, do paintings look different to someone who knows a lot about art history and aesthetics? Can racial prejudice cause someone to see a cellphone as a gun? If your beliefs can alter your perceptions, how can perceptions provide neutral justification for beliefs? And how does one draw a distinction between perception and thought in the first place? Readings will be drawn both from philosophy (e.g., Fodor, Block, Siegel) and psychology (e.g., Pylyshyn, Firestone, Lupyan). Recommended Course Background: Some previous exposure to philosophy, the mind-brain sciences, or other relevant background.
Instructor(s): S. Gross
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

German Romance Languages Literatures

AS.210.313. Medical Spanish. 3.0 Credits.
Medical Spanish is a comprehensive examination of vocabulary and grammar for students who either work or intend to work in medicine and health-related fields in Spanish-speaking environments. The student will be able to participate in conversations on topics such as contrasting health systems, body structures, disorders and conditions, consulting your doctor, physical and mental health, first-aid, hospitalization and surgery on completion of this course. In completing the course's final project students will apply, synthesize, and reflect on what has been learned in the class by creating a professional dossier individualized to their professional interests. There is no final exam. May not be taken satisfactory/unsatisfactory. Not open to native speakers of Spanish. No new enrollments permitted after the third class session.
Prerequisites: AS.210.311 OR AS.210.312 or appropriate Spanish placement exam score.
Instructor(s): J. López Raja
Area: Humanities.

AS.211.469. Limit-Experience, Limit-Texts. 3.0 Credits.
Why tell stories? What power do writers wield against the disorder of life? How do literary narratives measure up to experiences that usher us beyond the limits of the imaginable? In this course we will examine modern and contemporary works in French that engage with such limit states and situations as combat, imprisonment, madness, terminal illness, and corporeal transformation. Authors to be considered include Carrère, Chevillard, Darrieussecq, Delbo, Duras, Guibert, and Volodine.
Instructor(s): D. Schilling
Area: Humanities.

AS.212.696. Literature Confronts Science: Zola.
Zola worked with the theories of heredity of his time in the Rougon-Macquart novels. But he also attempted to use his understanding of biology and thermodynamics to reform the theory of the novel in general. This course will examine these two different effects of science on literature and try to see what leads an author to undertake such a project. For a more extended description, please see http://www.wilda.org/Courses/CourseVault/Grad/Zola/Syllabus.html. Advanced undergraduates with sufficient background may register for this course with permission of the instructor.
Instructor(s): W. Anderson

AS.213.345. Healing and Health Beyond Theology. 3.0 Credits.
Nietzsche argues in The Gay Science that to bring about a new day we need a new health—"great health," as he calls it, that enables us to surmount the sickness of our age and transcend ourselves. However much of an iconoclast Nietzsche considered himself to be, his idea of "great health" fits squarely within a theological tradition that claims that the condition for becoming a member of the ecclesia is faith, which cleanses the individual of sin and restores him to his original state. This course will examine the theological inheritance that has and continues to shape the notion of sickness and health dominant even in secular contexts, where well-being would seem to be regarded as a condition of the body rather than of the spirit. Reading to include works by Nietzsche, Kierkegaard, Augustine, Tillich, Heidegger, Scholem, Tolstoy, Büchner, Flaubert, and Kafka. Taught in English.
Instructor(s): R. Tobias
Area: Humanities
Writing Intensive.
AS.214.477. Magic, Marvel, and Monstrosity in the Renaissance. 3.0 Credits.
Magic, Monstrosity, and Marvels or Wonders call into question what we see and experience: what is reality, what is illusion; what’s natural and what’s supernatural? What’s human and what’s more, or less, than human? During the Renaissance, ideas about the nature of reality were bound up with questions and issues very different from those of our time. With the exact sciences still being invented, the nature of the world was much less hard and fast for Renaissance people than it is for the modern educated person. The literary masterpieces of the Italian Renaissance provide vivid illustrations of the early modern sense of wonder. Foremost among these are the theatrical comedies which Italian authors revived in imitation of the ancients, and the romances, especially Ariosto’s Orlando furioso (1532) and Tasso’s Gerusalemme liberata (1581). These and other works influenced ideas about magical and marvelous phenomena across Europe for centuries to come. Works will be read and discussed in English. Italian majors and graduate students (who should enroll in section 2) will attend a weekly supplemental discussion in Italian and compose their written work in Italian.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

Writing Seminars

AS.220.206. Writing about Science I: Daily News Journalism. 3.0 Credits.
This course is designed to teach students the skills of daily news reporting, with a focus on covering science news. Students will learn how to turn scientific discoveries into lively and engaging prose for the general public, interview sources, and pitch stories to news organizations. The skills taught are applicable to all areas of journalism, not just science journalism.
Instructor(s): D. Grimm
Area: Humanities
Writing Intensive.

AS.220.210. Introduction to Non-Fiction: Science as a Social Activity. 3.0 Credits.
Using the political and economic milieu of science and technology as a context for our writing, we will study how social factors such as government, money, secrecy, and ethics affect the conduct and public presentation of scientific and medical research. Controversies from 20th century history as well as current events will be discussed. Writing assignments to satisfy the W requirement will consist of short papers derived from classroom topics.
Instructor(s): W. Biddle
Area: Humanities
Writing Intensive.

AS.220.309. Writing Healthy Baltimore. 3.0 Credits.
Students will explore public health issues in Baltimore and then write about them first in short pieces, and then in longer, polished works. The framework will be the mayor’s Healthy Baltimore 2015 initiative — launched in 2011 to address the city’s top-10 public health problems, including obesity, smoking, drug and alcohol abuse, STDs, cancer, and environmental health hazards. Students will study the initiative and its historical context; examine data sets; explore where and how the initiative intersects with public health practitioners and advocacy groups at the neighborhood level; and write what they learn in different formats, including essays, breaking news, and substance analysis. Students will then “workshop” each other’s papers.
Instructor(s): K. Masterson
Area: Humanities
Writing Intensive.

AS.220.317. Writing about Science II: Feature Writing Journalism. 3.0 Credits.
This course is designed to teach students the skills of long-form narrative journalism, with a focus on covering science news. Skills taught apply to all areas of journalism, not just science journalism, and include how to compose scenes, create three-dimensional characters, create narrative tension, and conduct on-site reporting. The primary writing assignment will be a 3,000-word feature piece that is pitched, reported, and workshopped throughout the course of the class. "Writing About Science I" (formerly Becoming a Science Journalist) is recommended as a prerequisite for this course. Students who have not taken this course will need to complete a short writing test (may be waived for Writing Seminars students) and obtain the permission of the instructor to enroll.
To schedule this test, please contact the instructor at dgrim5@jhu.edu
Instructor(s): D. Grimm
Area: Humanities
Writing Intensive.

AS.220.424. Science as Narrative. 3.0 Credits.
Class reads the writings of scientists to explore what their words would have meant to them and their readers. Discussion will focus on the shifting scientific/cultural context throughout history. Authors include Aristotle, Copernicus, Galileo, Descartes, Newton, Darwin, Freud, Einstein, Heisenberg, Bohr, Crick and Watson.
Instructor(s): R. Panek
Area: Humanities
Writing Intensive.

Sociology

AS.230.341. Sociology of Health and Illness. 3.0 Credits.
This course introduces students to core concepts that define the sociological approach to health, illness and health care. Topics include: health disparities, social context of health and illness, and the Sociology of Medicine.
Instructor(s): E. Agree
Area: Social and Behavioral Sciences.

Comparative Thought and Literature

AS.300.139. Introduction to Intellectual History. 3.0 Credits.
This course offers a conceptual and historical introduction to Intellectual History. What makes the "history of ideas" different from the history of other objects? What, if anything, distinguishes the history of ideas from the history of philosophy? What is it exactly that we call "ideas"? In what sense do they have a history? These are examples of the kind of questions addressed in the course.
Instructor(s): P. Marrati
Area: Humanities

AS.300.143. Introduction to Comparative Literature. 3.0 Credits.
This course offers an introduction to the history, theory, and praxis of comparative literature. We will read texts from some of the founding figures of the discipline and look at the most recent debates in the field, including translation studies, literary theory, and world literature, among others. Particular attention will be given to the methodologies and problems of studying literatures in different linguistic traditions and the relation between literature and other areas of thought and culture, such as philosophy, art history, and psychoanalysis. Case studies in comparative approaches to literature will provide concrete examples to our discussions.
Instructor(s): L. Lisi
Area: Humanities.
AS.300.325. American Madness – History of the Treatment of the Mentally Ill. 3.0 Credits.
As mental illnesses became a social issue during the 18th century, community institutions were created in order to handle the needs of individuals with such illnesses collectively. This course will investigate the history of these institutions in the USA from the seemingly quiet, secluded, and peaceful private asylums in country settings, at the beginning of the 19th century, through the notorious crowded public, so-called “psychopathic hospitals” in mid-20th century, to the crisis-services, short-term acute psychiatric units, and out-patient services that followed the “death of the asylum” at the end of the 20th century. The history of the institutional care of the mentally ill in America is also the story of American psychiatry changing attitudes towards these individuals. Reading will include selections from 200 years of writings of asylum superintendents, psychiatrists, patients, and historians of psychiatry such as Foucault, Goffman, Grob, Scull, Lunbeck, Micale, and Mora.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.333. Melancholy in Science, Literature, and Film. 3.0 Credits.
This course explores the manifold nature of melancholy from an interdisciplinary perspective that combines sciences, history of medicine, and the arts. Defined by Greek medicine as the excess of black bile, melancholy, in its long history, has been seen as disease of the soul, state of intellectual grace, or psychological condition. The course will examine chronologically the development and variety of the meanings of melancholy between medical texts, visual representations, poetry, psychoanalytic theory, and films. The works analyzed will include, among others, those by Galen, Robert Burton, Albrecht Dürer, Shakespeare, Cervantes, Baudelaire, Freud, Lars von Trier.
Instructor(s): E. Fabietti
Area: Humanities.

AS.300.345. Madness Interpreted – A Case Study in Medical Humanities. 3.0 Credits.
Too often conventional medical education teaches the student to translate a rich and complex narrative of illness into a minimalistic account, stripped of its ambiguities. Case presentations, too, are highly formalized reports lacking the historical, cultural, and social context. Although medicine since antiquity relies on the interpretation of observations, "evidence-based medicine," when reductively used, tends to ignore the basic fact that we are "self-interpreting animals." Patients and doctors alike try to make sense of their experiences as they recount them and, hence, case narratives teach us not only about disease and medical practice but also what it means to be human. This course will concentrate on the "case" of what is arguably the most famous psychiatric patient in the world, Daniel Paul Schreber, the German finde-siècle Senatspräsident of the Saxon Supreme Court. Beginning with Freud, the first doctor who turned Schreber’s rich psychotic delusional world, as expressed in his bizarre, at times comic and then again painful, Memoir, into a "case of paranoia," we will follow the many interpretations that this narrative of illness with its unique cosmology, private theology, extraordinary creatures, transgressed sexuality, and cataclysmic vision of the universe, inspired in generations of psychoanalysts, historians, philosophers, theologians, literary critics, essayists, and scholars in political science as well as queer studies. Whether he was a paranoid schizophrenic, victim of traumatic abuse, a solipsistic philosopher, proto-fascist, or cultural hero, Schreber’s memoir offers a paradigmatic case in the study of the field of medical humanities. Readings will include: Schreber, Freud, Benjamin, Canetti, Klein, Lacan, Deleuze and Guattari, de Certeau, Lingis, Lyotard, and Santner. Cross-listed with GRLL and History.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.371. The Modernist Novel: James, Woolf, and Joyce. 3.0 Credits.
The purpose of this course is to survey works by three of the greatest, most relentless innovators of the twentieth century – Henry James, Virginia Woolf, and James Joyce – who explored and exploded narrative techniques for depicting what Woolf called the “luminous halo” of life. Selected works include: “The Beast in the Jungle,” The Portrait of a Lady, Jacob’s Room, Mrs. Dalloway, To the Lighthouse, A Portrait of the Artist as a Young Man, and Ulysses.
Instructor(s): Y. Ong
Area: Humanities.

AS.300.383. History of Madness from the Bible to DSM-V. 3.0 Credits.
Madmen, lunatics or the insane, have seen an extraordinary variety of responses and attitudes across the centuries. Whether seen as a “true” phenomenon or as socially constructed “madness” was defined and treated, examined and controlled, diagnosed and “cured” according to the spirit of the time. This course will follow the varied social imageries of “madness” throughout Western history, from the Bible to the contemporary and controversial Diagnostic Statistical Manual (DSM) in its most recent 5th edition. Alongside primary texts by Hippocrates, Avicenna, Pinel, and Freud and secondary texts by Michel Foucault, Ian Hacking, Edward Shorter, and Elaine Showalter, among others, we will acquaint ourselves with first-person accounts of “madness” and its different forms of treatment, ranging from lunatic asylum, through electric-shock treatments and lobotomies to psychoanalysis. The course will explore the interaction between the historical and social, scientific and political as well as economical factors that have shaped the views of “madness” and its treatment.
Instructor(s): O. Ophir
Area: Humanities.

AS.300.427. Reading Freud. 3.0 Credits.
Sigmund Freud was one of the most influential thinkers of the 20th century. Psychoanalysis, which was his theory of mind, a research method, and a therapeutic technique, offered concepts that pervade Western culture and the humanities. In this seminar which is designed for students from all fields of knowledge, we will closely and chronologically read Freud’s major works, follow his developing theories, and become familiar with psychoanalytic concepts such as the unconscious, the uncanny, instincts, sexuality and aggression, which illuminated mysteries in other fields, from literature to anthropology, from political science to religious studies, and from philosophy to the arts.
Instructor(s): O. Ophir
Area: Humanities.
Study of Women, Gender, Sexuality

AS.363.420. Stories of Hysteria. 3.0 Credits.

Hysteria, an elusive and polymorphous disease associated with the female body, was first diagnosed in Greek Antiquity. When, in the late nineteenth-century, Sigmund Freud decided to study it, he made discoveries that shaped in a decisive way the new science of psychoanalysis and offered new foundations for discussions of what we might now call “psychosomatic illness.” Though rarely diagnosed nowadays, hysteria provides a fascinating introduction to medical, clinical, social, and ethical questions connected to gender that have lost none of their relevance. We will study fictional narratives from the 18th century to the present as if they were case-studies – as a way of appraising hysteria’s changing and provocatively volatile definitions across time and in different cultural frameworks. Among our topics: trauma and PTSD, the concept of repression, masculinities, women and madness, and, above all, transformations in gender roles and identities in the modern era. In addition to selected readings of medical and historical materials available on Blackboard, texts for study are: The Nun (Diderot), Trilby (du Maurier), Fragment of a Case of Hysteria (Freud), Regeneration (Barker), The Icarus Girl (Oyeyemi), Redeployment (Klay).

Instructor(s): E. Ender
Area: Humanities.

Program in Museums and Society

AS.389.201. Introduction to the Museum: Past and Present. 3.0 Credits.

This course surveys museums, from their origins to their most contemporary forms, in the context of broader historical, intellectual, and cultural trends including the social movements of the 20th century. Anthropology, art, history, and science museums are considered. Cross-listed with History and History of Art.

Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.353. Revolutions of the Book: Material Culture & the Transformation of Knowledge from Antiquity to the Renaissance. 3.0 Credits.

Explores the material culture of knowledge through transformations in the technologies and arts of communication, taught entirely from rare books, manuscripts, and artifacts in JHU libraries and museum collections.

Instructor(s): E. Havens
Area: Humanities
Writing Intensive.

Military Science


The JHU Army Reserve Officers’ Training Corps (ROTC) was among the first to be established by Congress in 1916 and is routinely ranked at the top of the Nation’s 273 programs. Nearly 3,000 Hopkins students have received Army officer commissions through the program, with over 40 attaining the rank of general officer. Students can enter the program with as little as two years remaining as an undergraduate or may complete the requirements while pursuing a graduate degree. Upon graduation, Hopkins students are commissioned as a second lieutenant in the U.S. Army. Some are selected to attend a funded law school or several medical programs, while others serve in the Active Army, Reserves or National Guard. The Leadership and Management class specializes in leader development and is an excellent course for students aspiring to become leaders on campus and beyond. Additional information on military science or ROTC can be obtained at our building (behind the athletic center), by asking a current cadet, and by calling 1-800-JHU-ROTC or 410-516-7474. You can also email us at rotc@jhu.edu or visit the JHU ROTC website at http://jhurotc.com/page.php?page=home.

Scholarship and Financial Assistance

To apply for an ROTC scholarship go to http://www.goarmy.com/rotc/scholarships.html. Scholarship opportunities are regularly improved and incentives are added. Applications for scholarships by qualified students are awarded throughout the semester, and are often retroactive. A non-scholarship program is also available. For health profession and nursing students, ROTC can offer numerous opportunities to achieve specialized education, additional postgraduate scholarships and accession/graduation bonuses.

Curriculum

The curriculum normally consists of a two-year Basic Course (freshmen/sophomores) and a two-year Advanced Course (juniors/seniors). Some modification to this curriculum is common, as with graduate or transfer students. Completing the 30-day Basic Camp at Fort Knox, KY, is equivalent to the Basic Course. Successful graduates of Basic Camp are normally offered ROTC scholarships and an opportunity to enroll in the Advanced Course. Junior-ROTC experience, prior military service and military academy attendance may also qualify for Basic Course completion.

All Advanced Course students are cadets and have a contractual agreement with the Army. These students attend the Advanced Camp at Fort Knox, KY, between the 300- and 400-level courses. This is a core requirement to commission in the Army and cannot be waived.

Army ROTC strives to develop values-based graduates who offer expert leadership to the campus, the community and the Army. As such, we offer and encourage cadets to participate in: paid leadership and technical internships; cultural and language immersion programs; a number of Army military school opportunities in: Europe, South America, the Republic of Korea, Alaska, Hawaii, and across the continental United States.

Extracurricular activities may also include: community assistance, Red Cross blood drives, tutoring for at-risk children, and volunteering at the Veterans Administration. Cadets may apply for additional military training such as skydiving, helicopter rappelling, mountaineering, and cold weather training. New and challenging opportunities routinely become available.

Air Force ROTC Program

Admission to the Air Force ROTC program is available to JHU students through an agreement with the University of Maryland. AFROTC courses have been scheduled to enable students to complete all the requirements in one morning per week at the College Park campus. JHU students are eligible to compete for all AFROTC scholarships and flying programs. The two-, three-, and four-year scholarships pay tuition, books, fees, and a monthly stipend during the school year. After graduation and the successful completion of AFROTC requirements, students are commissioned second lieutenants in the Air Force.

Those interested in this program should call 301-314-3242 or write to:
AFROTC Det 330
University of Maryland
Cole Field House, Room 2126
College Park, MD 20742-1021

For more information see the website at http://www.afrotc.com/
Spring Leadership Labs, and Basic Camp. The focus is on developing basic knowledge supports their development as an Army leader. As you become further acquainted with MSL102, you will learn the structure of the ROTC Basic Course program consisting of MSL101, 102, 201, 202, Fall and Spring Leadership Labs, and Basic Camp. The focus is on developing basic knowledge and comprehension of Army leadership dimensions, attributes and core leader competencies while gaining an understanding of the ROTC program, its purpose in the Army, and its advantages for the student. Military Science courses require department permission and are restricted to active or inquiring ROTC members.

Instructor(s): B. Blaska.

**Courses**

**AS.374.101. Introduction to the Army. 2.0 Credits.**

The MSL I course produces a Cadet who accepts the Army as a values-based organization and embraces the scholar-athlete-warrior ethos; who is familiar with individual roles and responsibilities in support of team efforts and problem solving processes in military and non-military situations; who demonstrates oral and written communication skills, understands resilience, and demonstrates a commitment to learning. MSL101 introduces Cadets to the Army and the Profession of Arms. Students will examine the Army Profession and what it means to be a professional in the U.S. Army. The overall focus is on developing basic knowledge and comprehension of the Army Leadership Requirements Model while gaining a big picture understanding of the Reserve Officers’ Training Corps (ROTC) program, its purpose in the Army, and its advantages for the student. Cadets also learn how resiliency and fitness supports their development as an Army leader. As you become further acquainted with MSL102, you will learn the structure of the ROTC Basic Course program consisting of MSL101, 102, 201, 202, Fall and Spring Leadership Labs, and Basic Camp. The focus is on developing basic knowledge and comprehension of Army leadership dimensions, attributes and core leader competencies while gaining an understanding of the ROTC program, its purpose in the Army, and its advantages for the student. Military Science courses require department permission and are restricted to active or inquiring ROTC members.

Instructor(s): B. Blaska.

**AS.374.102. Foundations of Agile and Adaptive Leadership. 2.0 Credits.**

The MSL I course produces a Cadet who accepts the Army as a values-based organization and embraces the scholar-athlete-warrior ethos; who is familiar with individual roles and responsibilities in support of team efforts and problem solving processes in military and non-military situations; who demonstrates oral and written communication skills, understands resilience, and demonstrates a commitment to learning. MSL101 introduces Cadets to the Army and the Profession of Arms. Students will examine the Army Profession and what it means to be a professional in the U.S. Army. The overall focus is on developing basic knowledge and comprehension of the Army Leadership Requirements Model while gaining a big picture understanding of the Reserve Officers’ Training Corps (ROTC) program, its purpose in the Army, and its advantages for the student. Cadets also learn how resiliency and fitness supports their development as an Army leader. As you become further acquainted with MSL102, you will learn the structure of the ROTC Basic Course program consisting of MSL101, 102, 201, 202, Fall and Spring Leadership Labs, and Basic Camp. The focus is on developing basic knowledge and comprehension of Army leadership dimensions, attributes and core leader competencies while gaining an understanding of the ROTC program, its purpose in the Army, and its advantages for the student. Military Science courses require department permission and are restricted to active or inquiring ROTC members.

Instructor(s): B. Blaska.

**AS.374.110. Basic Leadership Laboratory, ROTC 101. 1.0 Credit.**

These introductory courses in a laboratory environment are designed to expose students to practical experiences, challenges and individual learning opportunities in a small group. Students learn the fundamentals of an organization and apply principles of leadership and management at the foundation level. Students develop military courtesy, organizational discipline, communication and basic leadership and management skills. Ultimately, students understand how to facilitate and lead a small group of four to five people as an integral part of a larger organization of 75-100 people through situational training opportunities in a variety of conditions. As a leadership practicum, students have the opportunity to serve in leadership positions and receive tactical and technical training. In addition to learning to lead groups of five to 100 people, students will also be exposed to training on first aid, operating Army equipment, Army activities such as rappelling and drill and ceremony. These laboratories are required for enrolled ROTC participants who desire to be considered for a commission in the Army. Corequisite: AS.374.101-AS.374.102. Military Science courses require department permission and are restricted to active or inquiring ROTC members.

Corequisites: AS.374.101 OR AS.374.102

Instructor(s): B. Blaska; C. Breaux; J. Kirkland.

**AS.374.120. Basic Leadership Laboratory II. 1.0 Credit.**

Students learn and apply team echelon leadership at an entry level. They continue development of military courtesy, discipline, communication and basic Soldier skills. Ultimately, students understand how to operate in and lead 4-5 persons through a program of training opportunities in a variety of conditions. Freshmen only.

Instructor(s): L. Scott; R. Graves.
AS.374.201. Leadership and Decision Making. 2.0 Credits.
The MSL II course produces a cadet grounded in foundational leadership
discipline and skills by following and leading small units to achieve
assigned missions; who applies critical thinking and problem solving
using Troop Leading Procedures (TLP); who comprehends the value
of diversity and understands the officer's role in leading change;
understands the fundamentals of the Army as a profession. MSL201
adds depth to the Cadets understanding of the Adaptability Army
Learning Area. The outcomes are demonstrated through Critical and
Creative Thinking and the ability to apply Troop Leading Procedures
(TLP) to apply Innovative Solutions to Problems. The Army Profession
is also stressed through leadership forums and a leadership self-
assessment. Students are then required to apply their knowledge
outside the classroom in a hands-on performance-oriented environment
during Leadership LABs team building exercises, and Field Training
Exercises. Military Science courses require department permission and
are restricted to active or inquiring ROTC members.
Instructor(s): C. Breaux; J. Kirkland.

AS.374.202. Army Doctrine and Team Development. 2.0 Credits.
MSL 202 focuses on Army doctrine and team development. The course
begins the journey to understand and demonstrate competencies as
they relate to Army doctrine. Army Values, Teamwork, and Warrior Ethos
and their relationship to the Law of Land Warfare and philosophy of
military service are also stressed. The ability to lead and follow is also
covered through Team Building exercises in small units up to squad
level. Students are then required to apply their knowledge outside the
classroom in a hands-on performance-oriented environment during
Leadership LABs (team building exercises, LTXs, VBS exercises). Includes
a 1-Hour lab per week taught by MS III Cadets. The Army Reserve Officer
Training Course (ROTC) Basic Course is an academically rigorous 2-
year college program comprised of four semester courses of instruction,
Leadership Labs (two sets, Fall/Spring), and the Cadet Basic Camp
conducted at Fort Knox, KY.
Instructor(s): C. Breaux; L. Scott.

AS.374.210. Basic Team Leadership. 1.0 Credit.
Students lead and assist in leading 4-5 person teams through a variety
of training opportunities. They learn the troop-leading procedures, basic
problem solving, and tactical skills aimed at military leadership. Students
will mentor and assist members of their team with improving their own
skills and leadership as well. Corequisite: AS.374.201. Military Science
courses require department permission and are restricted to active or
inquiring ROTC members.
Corequisites: AS.374.201
Instructor(s): C. Breaux; J. Kirkland.

AS.374.220. Advanced Team Leadership. 1.0 Credit.
Students perform duties of and develop their leadership, as team leaders
during a variety of induced training opportunities. Continued emphasis
is placed on troop-leading-procedures and simple problem solving.
Students lead physical fitness training and mentor subordinates in
military, academic and extra-curricular activities. Successful completion
of advanced team leadership allows students to progress into ROTC
Advanced Courses. Sophomores only.
Instructor(s): C. Breaux; J. Adler; L. Scott; M. Gorreck.

AS.374.255. US Intelligence Community: Theory & Practice. 3.0 Credits.
United States Intelligence Community (USIC): Theory & Practice is
a course designed to introduce and familiarize the student with the function,
organization, and operational elements of the USIC. The
classroom instruction exposes the student to the realities of the
Intelligence Community through structured individual and group
exercises designed to replicate real world situations in a classroom
setting. The full-spectrum of US intelligence is taught and includes: All-
Source Intelligence production, multi-source data fusion processes,
Special Operations, Counter-Terrorism, current affairs, and future national
security challenges. The course is taught by former members of US
Defense and Intelligence Communities. Military Science courses require
department permission and are restricted to active or inquiring ROTC
members.
Instructor(s): J. Adler; M. Boston
Area: Social and Behavioral Sciences
Writing Intensive.

AS.374.301. Training Management and the Warfighting Functions. 2.0
Credits.
MSL301 Training Management and the Warfighting Functions, is an
academically challenging course where you will study, practice, and
apply the fundamentals of Army Leadership, Officership, Army Values
and Ethics, Personal Development, and small unit tactics at the platoon
level. At the conclusion of this course, you will be capable of planning,
coordinating, navigating, motivating and leading a squad and platoon
in the execution of a mission during a classroom PE, a Leadership Lab,
or during a Field Training Exercise (FTX). You will be required to write
peer evaluations and receive feedback on your abilities as a leader and
how to improve those leader skills that can further develop you in to a
successful officer. This course includes reading assignments, homework
assignments, small group assignments, briefings, case studies, and
practical exercises, a mid-term exam, and a final exam. You will receive
systematic and specific feedback on your leader attributes, values, and
core leader competencies from your instructor, other ROTC cadre, and
MSL IV Cadets who will evaluate you using the Cadet Officer Evaluation
System (COER). Successful completion of this course will help prepare
you for the SROTC Advanced Camp, which you will attend in the summer
at Fort Knox, KY. Military Science courses require department permission
and are restricted to active or inquiring ROTC members.
Instructor(s): J. Adler; M. Gorreck
Writing Intensive.
AS.374.302. Applied Leadership in Small Unit Operations. 2.0 Credits.
MSL302 Applied Leadership in Small Unit Operations, is an academically challenging course you will study, practice, and apply the fundamentals of Army Leadership, Army Values and Ethics, Personal Development, and small unit tactics at the platoon level. At the conclusion of the course, you will be capable of planning, coordinating, navigating, motivating and leading a squad and platoon in the execution of a mission during a classroom PE, a Leadership Lab, or during a Field Training Exercise (FTX). You will be required to write peer evaluations and receive feedback on your abilities as a leader and how to improve those leader skills that can further develop you in to a successful officer. This course includes reading assignments, homework assignments, small group assignments, briefings, case studies, and practical exercises, a mid-term exam, and a final exam. You will receive systematic and specific feedback on your leader attributes, values, and core leader competencies from your instructor, other ROTC cadre, and MSL IV Cadets who will evaluate you using the Cadet Officer Evaluation Report (COER). Successful completion of this course will help prepare you for the SROTC Advanced Camp, which you will attend in the summer at Fort Knox, KY.
Prerequisites: AS.374.301 in the Fall
Corequisites: AS.374.320
Instructor(s): C. Breaux; J. Adler; J. Kirkland; M. Gorreck
Writing Intensive.

AS.374.307. Leadership in Military History. 2.0 Credits.
This course provides students with a historical perspective to decisions made by American military leaders: battlefield complexity, resource limitations, and teamwork deficiencies. Students cover major military engagements from the colonial period through the current operating environment. Students examine how leaders motivated their men, devised battle strategies, implemented rules of engagement, and managed supplies, transportation, and logistics for their troops. Requires permission of the Director of Military Science. Registration restricted to contracted ROTC cadets only.
Instructor(s): J. Adler; J. Wood; M. Gorreck
Writing Intensive.

AS.374.310. Basic Tactical Leadership Laboratory. 1.0 Credit.
In Leadership Laboratory, students are given the opportunity to apply what they have learned in the classroom, in a tactical or field environment. Students learn and demonstrate the fundamentals of leadership by planning, coordinating, navigating, motivating, and leading squads in the execution of both garrison and tactical missions. Students are evaluated as part of the Leadership Development Program and FM 6-22, Army Leadership. Ultimately, prepares students to excel at the four-week National Leadership Development and Assessment Course at Fort Lewis, WA. Corequisite: AS.374.301. Military Science courses require department permission and are restricted to active or inquiring ROTC members.
Corequisites: AS.374.301
Instructor(s): J. Adler; M. Gorreck.

AS.374.320. Advanced Tactical Leadership. 1.0 Credit.
Students further develop their leadership skills by directing and coordinating the efforts of 9-60 personnel on offensive, defensive and civil-support tactical-tasks. Develop written plans for garrison and field environments while supervising its execution. Ultimately, prepares students to excel at the four-week National Leadership Development and Assessment Course at Fort Lewis, WA. Permission required. Juniors only.
Instructor(s): C. Breaux; J. Adler; J. Kirkland.

AS.374.301. The Army Officer. 2.0 Credits.
MSL 401 Focuses on development of the Army Officer. It is an academically challenging course were you will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. You will also learn about Army programs that support counseling subordinates and evaluating performance, values and ethics, career planning, and legal responsibilities. At the conclusion of this course, you will be familiar with how to plan, prepare, execute, and continuously assess the conduct of training at the company or field grade officer level. Includes a lab per week overseeing MSL III lesson facilitation and supervised by ROTC Cadre. Military Science courses require department permission and are restricted to active or inquiring ROTC members.
Instructor(s): J. Adler; M. Gorreck.

AS.374.402. Company Grade Leadership. 2.0 Credits.
This is an academically challenging course were you will study, practice, develop, and apply critical thinking skills pertaining to Army leadership, officer skills, Army Values and ethics, personal development, and small unit tactics at platoon level. This course includes reading assignments, homework assignments, small group assignments, briefings, case studies, practical exercises, mid-term exam, and a Capstone Exercise in place of the final exam. For the Capstone Exercise, you will be required to complete an Oral Practicum that you will be evaluated on your knowledge of the 20 Army Warfighting Challenges (AWFC) covered throughout MSL401 and 402 coursework. In addition, you could be assessed on leadership abilities during classroom PE, Leadership Labs, or during a Field Training Exercise (FTX). You will receive systematic and specific feedback on your leader attributes, values, and core leader competencies from your cadre, PMS and other MSL IV Cadets who will evaluate you using the Cadet Officer Evaluation Report (COER). You will be required to write peer evaluations and receive feedback on your abilities as a leader and how to improve those leader skills. At the conclusion of this course, you will be able to plan, coordinate, navigate, motivate and lead a platoon in future operational environments. Successful completion of this course will assist in preparing you for your BOLC B course and is a mandatory requirement for commissioning.
Instructor(s): J. Adler; M. Gorreck.

AS.374.407. Being a Platoon Leader. 1.0 Credit.
This course prepares Cadets for actual challenges not necessarily described in text books that junior officers may face in today’s Army. Topics include: serving during war, conflict management, ethical dilemmas, time-constrained planning, and change management. This course also serves as prerequisite for the Basic Officer Leadership Course “B” phase by providing students with reinforced development on: deployment preparation, the military style of writing, supply management, human resources management, family support and operations management. Students will also learn how the Army’s organizational structure and administration affects Soldiers across ranks and over time. Finally, students will learn ways to leverage automation to improve their efficiency and effectiveness of records management and developing presentations for superiors.
Instructor(s): G. Stambone; M. Gorreck.
AS.374.410. Advanced Planning & Decision Making I. 1.0 Credit.  
Students develop a semester-long progression of programmed training activates that support completion of the unit's Mission Essential Task List. The laboratory builds from fall to spring semester as students master advanced problem solving, resource synchronization and executive decision making. Students evaluate, mentor and develop subordinate leaders as part of the Leadership Development Program and FM 6-22, Army Leadership. The course serves as the final evaluation and determination on a student's ability to lead Soldier's as a Second Lieutenant in the US Army. Co-requisite: AS.374.401-AS.374.402.  
Recommended Course Background: AS.374.301-AS.374.302, AS.374.310-AS.374.320 and Basic Course. Military Science courses require department permission and are restricted to active or inquiring ROTC members.  
Corequisites: AS.374.401 OR AS.374.402  
Instructor(s): J. Adler; M. Gorreck.

AS.374.420. Advanced Organizational Planning. 1.0 Credit.  
Students develop a semester-long progression of training activates that support completion of the unit's Mission Essential Task List. The laboratory builds on the first semester's achievements through advanced problem solving, resource synchronization and executive decision making. Students evaluate and develop subordinate leaders as part of the Leadership Development Program and FM 6-22, Army Leadership. The course serves as the final evaluation and determination on a student's ability to lead Soldier's as a Second Lieutenant in the US Army. Permission required. Seniors only.  
Instructor(s): J. Adler; M. Gorreck.

AS.374.456. 21st Century Intelligence Issues. 3.0 Credits.  
Taught by a former U.S. intelligence officer with decades of experience in strategic, operational, and tactical intelligence and as a member of three national-level intelligence organizations, "21st Century Intelligence Issues" introduces students to current and future intelligence issues of the 21st century, to include intelligence successes and failures; adversarial deception and deception awareness; intelligence, the law, and government oversight; covert action; and critical 21st century intelligence challenges posed by terrorism, weapons of mass destruction, cyber warfare, unconventional warfare, and non-state actor threats.  
Instructor(s): F. Hoffman  
Area: Social and Behavioral Sciences  
Writing Intensive.

AS.374.501. Independent Study. 1.0 Credit.  
Instructor(s): J. Adler; M. Gorreck  
Writing Intensive.

AS.374.512. Internship - Military Science. 0.0 - 3.0 Credits.  
Students will select a topic relevant to the study of military leadership and will complete a project based on current military doctrine and the contemporary operating environment of current military operations.  
Permission required.  
Instructor(s): M. Gorreck  
Writing Intensive.

AS.374.556. USIC Individual Research Topics (IRT) Independent Study Seminar. 3.0 Credits.  
Extension of AS.374.255, USIC Theory and Practices is an independent study course to formalize the research, analysis and production processes of United States Intelligence Cycle (USIC). The research topics will focus on collaboration of USIC thru specific topics in USIC sectors of HUMINT, SIGINT, OSINT, MASINT, Cyber-Security and Intelligence affairs.  
Prerequisites: AS.374.555 OR AS.374.255  
Instructor(s): J. Adler; M. Boston  
Writing Intensive.

AS.374.557. US Intelligence Community: National Security Analysis Independent Study. 3.0 Credits.  
Extension of AS.374.556, USIC Theory and Practices is an independent study course to formalize the research, analysis and production processes of United States Intelligence Community (USIC). The research topics will focus on US National Security issues.  
Prerequisites: AS.374.555 OR ( AS.374.255 AND AS.374.556 )  
Instructor(s): J. Adler; M. Boston  
Writing Intensive.

AS.374.558. US Intelligence Community: Advanced Concepts Independent Study. 3.0 Credits.  
Taught by former U.S. Intelligence Officers and members of U.S. Defense and Intelligence Community, "US Intelligence Community: Advanced Concepts" (USIC-AC) is an advanced independent study course designed to further familiarize the student with the function, organization, and operational elements of the U.S. Intelligence Community (IO). Gain advanced knowledge of the USIC and expand the development of raw data into intelligence products through individual coursework.  
Prerequisites: AS.374.555 OR ( AS.374.255 AND AS.374.556 AND AS.374.557 )  
Instructor(s): J. Adler; M. Boston  
Writing Intensive.

AS.374.570. Independent Study. 0.0 - 3.0 Credits.  
Instructor(s): J. Adler; M. Boston  
Writing Intensive.

Museums and Society  
http://krieger.jhu.edu/museums/  
The Program in Museums and Society is concerned with the institutions that shape knowledge and understanding through the collection, preservation, interpretation, and/or presentation of material culture. It focuses on the role of museums (broadly defined) and their contents in societies past and present, including their cultural, intellectual, and political significance.  
A minor in Museums and Society complements study in a range of fields, including but not limited to anthropology, archaeology, history, history of art, and history of science and technology. Many courses include visits to or focused work in local and regional institutions, as well as in on-campus collections (Archaeological Museum, Homewood Museum, Evergreen Museum and Library, and the Sheridan Libraries).  
Whether they are researching a historical artifact or debating the obligations of public institutions, students in the program are challenged to approach their discipline from a new angle. While some may choose to pursue a museum career, the program has the larger goal of encouraging critical, careful thinking about some of the most influential cultural institutions of our day.

Requirements for a Minor in Museums and Society  
Course requirements for the minor in Museums and Society are designed to introduce students to a broad set of historical, theoretical, and practical museum issues and to give them the opportunity to explore museums first-hand. Prospective minors should consult with the Director of Undergraduate Studies for guidance in designing a program of study.  
• A minimum of six different courses (amounting to at least 18 credits) selected from those approved by the program.  
• Required courses: AS.389.201 and AS.389.202 (Introduction to Museum sequence, offered annually).
Four additional courses in the program: Of these courses, at least three must be 300-level or higher and at least two different primary disciplines must be represented; these four courses must also include a minimum of three credits of "practicum" [POS-Tag PMUS-PRAC] work.

Courses used to satisfy minor requirements must be taken for a letter grade. Students must earn a "C-" or higher grade in all courses used to satisfy minor requirements.

### Introductory Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.389.201</td>
<td>Introduction to the Museum: Past and Present</td>
<td>3</td>
</tr>
<tr>
<td>AS.389.202</td>
<td>Introduction to the Museum: Issues and Ideas</td>
<td>3</td>
</tr>
</tbody>
</table>

### Four Upper-Level Electives

At least three must be 300-level or higher courses.

Three credits of practicum work [POS-Tag PMUS-PRAC]

Two courses must be from at least two different primary disciplines

| Total Credits | 18 |

### Additional details:

**Introduction to the Museum sequence:** Ideally, students should take at least one of the two introductory courses before enrolling in more focused courses, but this is not required.

**Departmental distribution:** In keeping with the interdisciplinary nature of the program, students are encouraged to explore various fields and must complete courses in at least two different primary disciplines beyond Museums and Society. Primary disciplines are defined either as the home department for the course (identified by the course's three-digit prefix), as the first cross-listing beyond Museums and Society, or as the home discipline of the instructor. Students should seek guidance from the program to ensure they are fulfilling this requirement, and should note that Independent Study and Capstone credits cannot be applied to it.

**Practicum Work:** Practicum credits can be earned only from courses designated as Museums and Society "practicum" in the course description [POS-Tag PMUS-PRAC].

**Independent Study and Capstone:** Students have two options for pursuing independent work for credit in Museums and Society. The Independent Study typically takes a more traditional academic approach to research and presentation; the Capstone encourages research that is engaged with collections and results in an alternative, often public project. Students interested in these options should consult the university's independent work policy and follow the guidelines outlined under Independent Research (http://krieger.jhu.edu/museums-society/academics/independent-research). Approval for credit will not be given until a project has been officially approved by an appropriate mentor, in full and frequent consultation with the Program in Museums and Society.

No more than 3 credits of independent work can be applied to the minor.

**Internships:** Internships are valuable opportunities to expand horizons, learn in the field, and investigate real-world applications of academic work. The Program in Museums and Society highly encourages students to explore internship options and works with the Career Center to do so. However, while the program sponsors interns for academic credit when needed by the host institution, such credit cannot be used to satisfy minor requirements. Students interested in receiving credit for independent work should consider the Independent Study and Capstone options instead.

**Other Information:** No course other than the Independent Study or Capstone may be counted toward the minor more than once (up to a maximum of 3 credits).

### Sample Program of Study for a Minor in Museums and Society

A sample path toward completion might include the following sequence, but many other paths are possible. Please consult with the Director of Undergraduate Studies for guidance.

#### Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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#### Sophomore

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>One 300-level seminar</td>
<td>3</td>
<td>One 300-level seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A practicum course</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Senior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 300+ level practicum course or a 300+ level seminar course</td>
<td>3</td>
</tr>
</tbody>
</table>

### Total Credits: 18

1 Recommended but not required to be taken freshman year.

For current faculty and contact information go to http://krieger.jhu.edu/museums/directory/

### Faculty

#### Assistant Director

Jennifer P. Kingsley (interim director 2017-19)

Senior Lecturer, Museums and Society; medieval art, history of collecting and display, art museums, inclusive museums, history of the senses, digital knowledgescapes.

### Affiliates Board

Sanchita Balachandran
Curator/Conservator, Johns Hopkins Archaeological Museum and Lecturer, Near Eastern Studies.

Rebecca M. Brown
Associate Professor, History of Art.

Aaron Bryant
Museum Curator, Smithsonian Institution, National Museum of African American History & Culture.

N.D.B. Connolly
Herbert Baxter Adams Associate Professor, History.

Gabrielle Dean
William Kurrelmeyer Curator, Modern Literary Rare Books and Manuscripts and Lecturer, Museums and Society.

Linda DeLibero
Director, Film and Media Studies Program.

François Furstenberg
Professor, History.

Gamynne Guillotte
Director of Interpretation and Public Engagement, Baltimore Museum of Art.

Stuart W. Leslie
Professor, History of Science and Technology.

Jean McGarry
Professor, Writing Seminars.

Jacqueline M. O’Regan

Anand Pandian
Associate Professor, Anthropology.

Professors
Betsy M. Bryan
Vice-Dean for Humanities and Social Sciences, Alexander Badawy Chair in Egyptian Art and Archaeology, Near Eastern Studies: Egyptian art and archaeology, and Egyptology.

Stephen Campbell
Henry M. and Elizabeth P. Wiesenfeld Professor, History of Art: Italian Renaissance art, the studiolo and Renaissance collecting.

Marian Feldman

Robert H. Kargon
Willis K. Shepard Professor of the History of Science, History of Science and Technology: history of physics, science, and social change.

Stuart W. Leslie
History of Science and Technology: history of technology, science-based industry, and 20th-century American science.

Tobie Meyer-Fong
History, social, cultural history of China since 1600.

Bernadette Wegenstein
German and Romance Languages and Literatures and Director, Center for Advanced Media Studies: media arts, film, and critical theory.

Associate Professor
Rebecca M. Brown
History of Art: Southeast Asian art and politics of display.

Assistant Professors
Emily S.K. Anderson
Classics: Aegean and Eastern Mediterranean Bronze Age art and archaeology, material culture, sociocultural interaction, craft, and glyptic.

Yulia Frumer
History of Science and Technology: East Asia and technological instruments.

Samuel Spinner
German and Romance Languages and Literatures: Yiddish and German-Jewish literature, history of anthropology, museum studies, and visual culture.

Pier Luigi Tucci
History of Art: Roman art and architecture, spolia, and collecting of ancient art.

Molly Warnock
History of Art: modern art.

Teaching Faculty
Lisa DeLeonardis
Austen Stokes Associate Professor in Art of the Ancient Americas, History of Art: ancient art of the Americas.

Affiliated Instructors and Museum Professionals
James Archer Abbott
Philip Franklin Wagley Director and Curator, Evergreen Museum and Library. 19th- and 20th-century American decorative arts and furniture, historic houses, curatorial practice, including collections management and exhibitions.

Virginia Anderson
Art Historian and Independent Scholar.

Sanchita Balachandran
Curator/Conservator, Johns Hopkins Archaeological Museum and Lecturer, Near Eastern Studies: conservation history and ethics; archaeological conservation and site management; collections management and museum practice.

Doreen Bolger

Elizabeth Comer
Project Manager and Principal Investigator, EAC/Archaeology.

Gabrielle Dean
William Kurrelmeyer Curator, Rare Books and Manuscripts and Lecturer, Museums and Society: history of books, libraries, reading, literary culture; books as objects.

Lori Beth Finkelstein
Vice-President of Education, Interpretation and Volunteer Programs, Maryland Zoo in Baltimore.

Robert Forloney
Program Developer and Cultural Institution Consultant.

Earl Havens
William Kurrelmeyer Curator of Rare Books and Manuscripts and Adjunct Assistant Professor, Department of History: early modern Europe, history of collecting, early libraries.

Amy Landau
Director of Curatorial Affairs and Curator of Islamic and South and Southeast Asian Art, The Walters Art Museum.

Whitney C. Levandusky

Elizabeth Maloney
Museum Educator and Director of Interpretation, Baltimore Museum of Industry.

Arthur Molella
Director Emeritus, Lemelson Center for the Study of Invention and Innovation, National Museum of American History, Smithsonian Institution.

Jacqueline M. O’Regan

Elizabeth Rodini
Writer, Curator, Teacher, and Founder of the Program in Museums and Society.

Julie Rose
Curator, Homewood Museum.

Lorraine C. Trusheim
Independent Objects Conservator, Halcyon Objects Conservation LLC.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

Freshmen will learn and apply analytical methods used in the technical study of archaeological objects by examining and researching ancient examples in the Johns Hopkins Archaeological Museum. Freshman Only.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.120. Discover Hopkins: Examining Archaeological Objects. 1.0 Credit.
In this course, we examine artifacts from the Johns Hopkins Archaeological Museum in order to learn about the role of materials such as ceramics, metal, glass, faience and stone in the history, art and culture of the ancient world. We will visit local artists’ studios to understand how these materials are utilized today, and examine comparative examples in local art museums. Students will work hands on with artifacts each day.
Instructor(s): S. Balachandran.

AS.389.201. Introduction to the Museum: Past and Present. 3.0 Credits.
This course surveys museums, from their origins to their most contemporary forms, in the context of broader historical, intellectual, and cultural trends including the social movements of the 20th century. Anthropology, art, history, and science museums are considered. Cross-listed with History and History of Art.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.202. Introduction to the Museum: Issues and Ideas. 3.0 Credits.
This course considers the practical, political, and ethical challenges facing museums today, including the impact of technology and globalization, economic pressures, and debates over the ownership and interpretation of culture. Included this year is some hands on work at the Peale Museum.
Instructor(s): R. Forloney
Area: Humanities, Social and Behavioral Sciences.

AS.389.205. Examining Archaeological Objects. 3.0 Credits.
This course considers the role of materials in the production, study and interpretation of objects by examining artifacts from the Johns Hopkins Archaeological Museum. Students will consider materials such as ceramics, stone, metal, glass, wood and textiles, and visit artists’ studios to gain an understanding of historical manufacturing processes. M&S practicum course. Cross-listed with Archaeology, Near Eastern Studies, Classics, and History of Art.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.250. Conservation of Material Culture: Art, Artifacts and Heritage Sites. 3.0 Credits.
This course will introduce students to the field of art conservation through the study of paintings, paper, books, objects, contemporary sculpture and historic preservation. Topics covered will include: methods of manufacture, agents of deterioration, preservation initiatives, conservation treatment and ethics, and conservation science. Cross-listed with History of Art. Class usually meets at 1:30 - 3:50 PM, except for days with field trips.
Instructor(s): L. Trusheim
Area: Humanities.

AS.389.275. Interpreting Sites & Collections: An Introduction to Museum Education. 3.0 Credits.
Part public history, part introduction to museum practices, this hands-on course explores how heritage areas and museums serve communities through interpretation. Each year, students partner with a community to develop research-based, visitor-centered interpretive material, in the 2015 Baltimore National Heritage Area. Field trips and community meetings will be a significant part of the course. Cross-listed with History and History of Science. M&S practicum course. Class usually meets 1:30 - 3:50 except for days with field trips.
Instructor(s): E. Maloney
Area: Humanities, Social and Behavioral Sciences.

AS.389.300. The Virtual Museum. 3.0 Credits.
Course draws on both classic readings in material culture and emerging theories of the digital to consider how the internet has changed objects and the institutions that collect, preserve, display and interpret them. Students will contribute to an established virtual museum and create their own.
Instructor(s): J. Kingsley
Area: Humanities.

AS.389.303. World of Things. 3.0 Credits.
This course introduces students to current approaches to objects, their materials, and materiality. Each class starts from a specific inspiration (body parts, fakes, the materiality of ISIS…..) and treats the museum as a site for investigating the relationship between people and things.
Instructor(s): J. Kingsley.
AS.389.311. From Treasure House to Production House: Exploring New Roles for the Museum in the 21st Century. 3.0 Credits.
Students work with the Director of the Peale Center for Baltimore History and Architecture as it reinvents itself as a museum for the twenty-first century. Involves working with community story-tellers in residence. Extra time is to allow for field trip travel - most days class runs 1:30-3:50.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.

AS.389.315. Ancient Color: The Technologies and Meanings of Color in Antiquity. 3.0 Credits.
What role did the colorful surfaces of sculptures, vessels and textiles play in the ancient world? We examine historical texts and recent scholarly and scientific publications on the technologies and meanings of color in antiquity, and use imaging and analytical techniques to study polychromed objects from the Johns Hopkins Archaeological Museum.
Instructor(s): S. Balachandran
Area: Humanities, Social and Behavioral Sciences.

AS.389.321. GhostFood: Curatorial Practicum with the Contemporary. 3.0 Credits.
Students work with Baltimore's Contemporary and NYC artist Miriam Simun on GhostFood, a project using art to engage important questions concerning the environment, climate change, and the politics of food.
Instructor Permission. Contact erodini@jhu.edu for enrollment approval.
M&S practicum course.
Instructor(s): D. Haggag
Area: Humanities.

AS.389.329. Author/Canon/Archive. 3.0 Credits.
Why are some literary works from the past reprinted,anthologized, and considered worthy of study, but not others? Why are some works "lost" and some "rediscovered," while others simply fall out of favor? Focusing on nineteenth- and early twentieth-century American literary culture, we will use rare books and archival materials from JHU collections to examine Edgar Allan Poe, Walt Whitman, Emily Dickinson, Stephen Crane, Charles Chesnutt, and Zora Neale Hurston, along with a few authors you've never heard of, in terms of the relationship between authorship, stewardship, and status.
Instructor(s): G. Dean
Area: Humanities, Social and Behavioral Sciences.

AS.389.335. Recreating Ancient Greek Ceramics. 4.0 Credits.
This hands-on course in experimental archaeology brings together undergraduate and graduate students across disciplines to study the making of Athenian vases. Students work closely with experts in ceramic artists, and in consultation with art historians, archaeologists, art conservators, and materials scientists to recreate Greek manufacturing processes.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.336. Heritage at Work. 3.0 Credits.
Working with the Catoctin Furnace historic site, students will gain hands-on experience connecting archaeology with interpretive exhibitions, public outreach, and community engagement. Several field trips to Catoctin required.
M&S practicum course.
Instructor(s): E. Comer
Area: Humanities, Social and Behavioral Sciences.

AS.389.340. Critical Issues in Art Conservation. 3.0 Credits.
The course examines recent controversies in the conservation of major global art works and sites, raising questions concerning the basic theoretical assumptions, practical methods and ethical implications of art conservation. Cross-Listed with History of Art and Anthropology.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.343. Edgar Allan Poe and His Afterlives. 3.0 Credits.
We will investigate the creative development and iconic afterlife of a canonical American author, Edgar Allan Poe, as a case-study in literary legacy and cultural heritage. What is the lifespan of a literary work, and how do works "stay alive" for later generations? Students will examine rare Poe materials and create a digital exhibition of Poe archives.
Instructor(s): G. Dean
Area: Humanities, Social and Behavioral Sciences.

AS.389.349. Art, Museums and the Law. 3.0 Credits.
This course will introduce and examine the legal systems that structure and guide museums' management of collections and relationships with artists, employees, the public, the state, and the international community.
Instructor(s): W. Levandusky
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

In 1857 Baltimore's historic George Peabody Library was born, one of America's first public libraries. This course studies its history, rare book collections, and foundational role in Baltimore's cultural history.
Instructor(s): E. Havens
Area: Humanities
Writing Intensive.

AS.389.353. Revolutions of the Book: Material Culture & the Transformation of Knowledge from Antiquity to the Renaissance. 3.0 Credits.
Explores the material culture of knowledge through transformations in the technologies and arts of communication, taught entirely from rare books, manuscripts, and artifacts in JHU libraries and museum collections.
Instructor(s): E. Havens
Area: Humanities
Writing Intensive.

AS.389.355. Literary Culture in the Nineteenth-Century Library. 3.0 Credits.
What did people actually read in the nineteenth century? What can we learn from their books and magazines? In this class, we read nineteenth-century English and American literary works and examine nineteenth-century literary objects from the collection of the George Peabody Library, to better understand the cultural and material environments within which literary works circulated. Featured writers likely to include Edgar Allan Poe, Charles Dickens, Harriet Beecher Stowe, Emily Dickinson, Mark Twain, Stephen Crane. Several field trips to the Peabody Library throughout the semester.
Instructor(s): G. Dean
Area: Humanities
Writing Intensive.
AS.389.356. Halls of Wonder: Art, Science, and Literature in the Age of the Marvelous, 1500-1800. 3.0 Credits.
Instructor(s): E. Havens
Area: Humanities.

AS.389.357. Heaven on Earth: Art, Culture and Wonder in the Vatican Museum and Library. 3.0 Credits.
This interdisciplinary course will explore the institutional, cultural, artistic and architectural history of St. Peter’s and the Vatican Museum and Library from Antiquity through the Renaissance, up to the present day. Class meets in the Dick Macksey Seminar Room of the Brody Learning Commons. Cross-listed with History.
Instructor(s): E. Havens
Area: Humanities.

AS.389.358. Collecting the Contemporary. 3.0 Credits.
What does it mean to be a collector? Students will visit private collections of contemporary art in Baltimore, learning from collectors and their objects. This course alternates seminar meetings, focused on theories and practices of collecting, with field trips. Cross-listed with History of Art.
Instructor(s): V. Anderson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.359. Modernist Networks in the Archive. 3.0 Credits.
This class examines three American writers who built important and enduring networks, Ezra Pound, Gertrude Stein, and Langston Hughes. We will investigate the artefactual traces of their networks through recently acquired special collections materials and digital representations, in order to address questions about aesthetics and style, politics and power, race and gender, and what is and is not present in the literary archive.
Instructor(s): G. Dean
Area: Humanities.

AS.389.370. Canon. 3.0 Credits.
This course will develop interpretation for an installation to accompany a major retrospective of artist Jack Whitten that considers the “canon” of art history as a site of ongoing negotiation between taste-makers, artists, dealers, and critics, as well as art institutions that include the market and the museum. Students will take advantage of archives at the BMA, the Library of Congress and Howard University. Students will help select the artworks and themes for the show; research individual participants in the social networks that facilitated the success of some artists over others; and research the biographies of individual artworks - some that have entered the canon and some that should. M&S Practicum. CBL Course. Cross-listed with Africana Studies.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.371. Museums and Social Responsibility. 3.0 Credits.
Do museums have a social responsibility? What roles should they play in their communities? Should they be agents of social change or social justice? This course explores the ways in which museums engage with local communities. Students work in partnership with a specific museum to develop an original and fundable proposal that attends to its social responsibility. Field trips and guest speakers will be a key feature of this course. M&S practicum course. CBL course. Cross-listed with Sociology.
Instructor(s): E. Maloney
Area: Humanities.

AS.389.372. Zoos as Community Institutions. 3.0 Credits.
This course examines zoos and living collections from historical and contemporary perspectives, taking into account the potentially conflicting role of zoos as conservation organizations, educational institutions, and entertainment venues. The class culminates in the creation of conservation education content for Baltimore City elementary school children. M&S practicum course.
Instructor(s): L. Finkelstein
Area: Humanities
Writing Intensive.

AS.389.374. Museum Lab: Creating Participatory Spaces at the Baltimore Museum of Industry. 3.0 Credits.
Where are visitor voices and perspectives in museums? Using contemporary scholarship, philosophical frameworks, and practical approaches, we tackle this question for an interactive exhibition at the Baltimore Museum of Industry. Approximately half of the class meetings will take place off campus at the museum. Transportation provided. Class usually meets 1:30-3:50. M&S practicum course; CBL course.
Instructor(s): E. Maloney
Area: Humanities, Social and Behavioral Sciences.

AS.389.375. Black Artists in American Art Museums: Correcting the Canon. 3.0 Credits.
Students are invited to examine critically the history of Black artists exhibiting within American museums. With the help of BMA staff, class will develop interpretation for an installation to accompany a major retrospective of artist Jack Whitten that considers the “canon” of art history as a site of ongoing negotiation between taste-makers, artists, dealers, and critics, as well as art institutions that include the market and the museum. Students will take advantage of archives at the BMA, the Library of Congress and Howard University. Students will help select the artworks and themes for the show; research individual participants in the social networks that facilitated the success of some artists over others; and research the biographies of individual artworks - some that have entered the canon and some that should. M&S Practicum. CBL Course. Cross-listed with Africana Studies.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.376. Enslaved at Homewood: Slavery in 19th Century Maryland. 3.0 Credits.
Students consider the representation of slavery in historic house museums of the late 20th century through the present, and use the university’s Homewood Museum as a laboratory for the development, production and mounting of an exhibit about the men, women and children who labored at Homewood in the nineteenth century. Museums and Society Practicum course.
Instructor(s): A. Schreiber
Area: Humanities, Social and Behavioral Sciences
Cross-listed with History of Art.

AS.389.377. Black Arts in American Art Museums: Correcting the Canon. 3.0 Credits.
Students are invited to examine critically the history of Black artists exhibiting within American museums. With the help of BMA staff, class will develop interpretation for an installation to accompany a major retrospective of artist Jack Whitten that considers the “canon” of art history as a site of ongoing negotiation between taste-makers, artists, dealers, and critics, as well as art institutions that include the market and the museum. Students will take advantage of archives at the BMA, the Library of Congress and Howard University. Students will help select the artworks and themes for the show; research individual participants in the social networks that facilitated the success of some artists over others; and research the biographies of individual artworks - some that have entered the canon and some that should. M&S Practicum. CBL Course. Cross-listed with Africana Studies.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.389.378. Collections Remix: Black at Hopkins. 3.0 Credits.
We turn a critical eye on our university’s material culture and memory under the guidance of local experts on collecting and interpreting materials that represent the African-American experience. Students will develop a strategic plan to guide future collecting on campus and will stage creative interventions with or around objects to reveal hidden stories and rethink existing interpretation. M&S Practicum. CBL course.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.379. In the Gardens at Evergreen Museum. 3.0 Credits.
Investigate how historic houses design and manage their grounds for leisure, community engagement, environmental initiatives, art installations and special events. Consider the history of Evergreen’s 25-acre estate and create concepts for how to engage its many communities. Multiple class meetings take place at the Museum. Class runs 1:30-3:50 most days; 2:00-4:30 at the museum on field trip days.
Instructor(s): E. Maloney
Area: Humanities, Social and Behavioral Sciences.
AS.389.384. Object Encounters at the Baltimore Museum of Art. 3.0 Credits.
Using the Baltimore Museum of Art as a laboratory, students examine canonical narratives in art museums and iterate new approaches to objects in museums that build equity, interrogate privilege, decolonise, revisualise and offer alternative stories. Class meets at the museum every other week.
Instructor(s): J. Kingsley
Area: Humanities, Social and Behavioral Sciences.

AS.389.386. Islamic Art in the 21st Century Museum. 3.0 Credits.
What narratives about Islam and Islamic art does the visitor encounter at the museum? Recent re-installations of Islamic art will be studied in the context of current issues, including Islamophobia, attacks on cultural heritage, and hesitation in addressing matters of faith in public institutions. Cross-listed with History of Art and Islamic Studies.
Instructor(s): A. Landau
Area: Humanities, Social and Behavioral Sciences.

AS.389.440. Who Owns Culture?. 3.0 Credits.
This seminar explores the complicated, often explosive concept of cultural property, including questions surrounding the ownership, preservation, and interpretation of artifacts, monuments, heritage sites, and living traditions. Cross-listed with Anthropology and History of Art.
Instructor(s): E. Rodini
Area: Humanities, Social and Behavioral Sciences.

AS.389.450. Readings in Material Culture. 3.0 Credits.
Objects, things, "stuff": this seminar will pursue classic texts and emerging methodologies to explore the myriad ways materials and materiality have been theorized across disciplines. For graduate/advanced undergraduate students.
Instructor(s): E. Rodini; R. Brown
Area: Humanities.

AS.389.501. Independent Study - Museums & Society. 3.0 Credits.
Instructor(s): J. Kingsley.

AS.389.502. Independent Study- Museum and Society. 1.0 - 3.0 Credits.
Instructor(s): J. Kingsley.

AS.389.511. Museum & Society Internship. 1.0 Credit.
Instructor(s): J. Kingsley.

AS.389.521. Capstone in Museums and Society. 1.0 - 3.0 Credits.
The Capstone allows students to develop and carry out their own, hands-on research project in a museum, collection, archive, or other living resource. Final projects must involve some form of public presentation (exhibition, lecture, poster, web-based, etc.) and a work of self-reflection (journal, brief paper, blog, or other). Projects must be approved and overseen by a supervising faculty member and approved by the Program's Director, in keeping with the University's Independent Work Policy.
Instructor(s): J. Kingsley.

Prerequisites: AS.389.201; AS.389.202
Instructor(s): J. Kingsley.

AS.389.522. Capstone in Museum and Society. 1.0 - 3.0 Credits.
The Capstone allows students to develop and carry out their own, hands-on research project in a museum, collection, archive, or other living resource. Final projects must involve some form of public presentation (exhibition, poster, web-based, etc.) and a work of self-reflection (journal, brief paper, blog, or other). Projects must be approved and overseen by a supervising faculty member and approved by the Program's Director, in keeping with the University's Independent Work Policy.

AS.389.594. Independent Study. 0.0 - 3.0 Credits.

AS.389.599. Museum & Society Internship. 1.0 Credit.
Instructor(s): E. Rodini; J. Kingsley.

AS.389.650. Readings in Material Culture.
Objects, things, "stuff": this seminar will pursue classic texts and emerging methodologies to explore the myriad ways materials and materiality have been theorized across disciplines. For graduate/advanced undergraduate students.
Instructor(s): E. Rodini; R. Brown
Area: Humanities.

Cross Listed Courses

History of Art

AS.010.305. Global Modern Art: Africa, Asia, the Pacific and the Americas. 3.0 Credits.
Artists around the world grappled with the modern, working through local concerns and struggles but continually engaged with counterparts in Europe, North America, and across the "global South." This course will introduce art, artists, movements, and institutions of modernism from approximately 1880 to the present and from outside of the northern Atlantic while critically examining the very notion of “global modernism.”
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

AS.010.307. Diplomats, Dealers, and Diggers: The Birth of Archaeology and the Rise of Collecting from the 19th c. to Today. 3.0 Credits.
The development of archaeology in the Middle East – its history of explorers, diplomats, missionaries and gentlemen-scholars – profoundly shaped the modern world, from the creation of new museums and the antiquities market to international relations and terrorism.
Instructor(s): M. Feldman
Area: Humanities

AS.010.310. The 'Long Sixties’ in Europe. 3.0 Credits.
This seminar examines aspects of advanced artistic production that emerged in France, Italy, the Benelux, and German-speaking countries primarily in the years 1945-1972 as constituent elements of the “Long Sixties,” a period of extraordinary and often rapid social transformation. Among our questions: How was the work of art reimagined and repositioned in the wake of World War II and the horrors of the Holocaust, in the context of reconstruction and an emerging consumer society, and in light of the Cold War, decolonization, and other political tensions and cataclysms? How did artists conceive the claims of artistic tradition in a rapidly expanding field of aesthetic practices and possibilities? What were the relations among advanced artistic practices and the "cultural revolutions" generally taken to have come to a head ca. 1968? Integral to this course is a student-curated exhibition of avant-garde materials at the MSE Library, to open in November 2018.
Instructor(s): M. Warnock
Area: Humanities.

AS.010.331. The Renaissance Body Exposed: Exhibiting the Nude in European Art 1400-1550. 3.0 Credits.
Explores the extraordinary currency of the naked human figure in pre-modern European visual culture, only inadequately accounted for by explanations such as the "rise of naturalism" or the "revival of antiquity." Will also explore curatorial questions arising from an exhibition currently in preparation on the Renaissance nude. Assignment in the form of catalog texts and a "virtual exhibition."
Instructor(s): S. Campbell
Area: Humanities
Writing Intensive.
**AS.010.382. The Politics of Display in South Asia. 3.0 Credits.**
Through examining collecting, patronage, colonial exhibitions, and museums, this course examines how South Asia has been constructed in practices of display. Themes: politics of representation, spectacle, ethnography, and economies of desire related to colonialism and the rise of modernity. Cross-list with Anthropology, Museums and Society and Political Science.
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

**Classics**
**AS.040.137. Freshman Seminar: Archaeology at the Crossroads: The Ancient Eastern Mediterranean through Objects in the JHU Archaeological Museum. 3.0 Credits.**
This seminar investigates the Eastern Mediterranean as a space of intense cultural interaction in the Late Bronze Age, exploring how people, ideas, and things not only came into contact but deeply influenced one another through maritime trade, art, politics, etc. In addition to class discussion, we will work hands-on with artifacts from the JHU Archaeological Museum, focusing on material from Cyprus.
Instructor(s): E. Anderson
Area: Humanities
Writing Intensive.

**AS.040.235. Past is Present: Cultural Heritage and Global Interactions. 3.0 Credits.**
The uncovering, collection and valuation of the archaeological past is deeply embroiled in global interactions - diplomatic, economic, cultural. We examine the complex role of cultural heritage through consideration of case studies and analytic approaches. Frequent visits to area museums.
Instructor(s): E. Anderson
Area: Humanities
Writing Intensive.

**AS.130.334. Egyptian Funerary Arts in the Archaeological Museum. 3.0 Credits.**
This class will aim to cover the production and choice of funerary objects for Egyptian elite tombs in several eras of antiquity: the Middle and New Kingdoms, the Third Intermediate Period, and the Late Periods. Students will work with specific objects after learning generally about them, and they will carry out analyses of materials, pigments, construction methods, and erosion and degradation effects. They will create a virtual exhibition for the Museum's website and present their results for inclusion in the museum cataloguing project.
Instructor(s): B. Bryan; S. Balachandran
Area: Humanities.

**AS.133.706. Egyptian Funerary Arts in the Archaeological Museum.**
This class will aim to cover the production and choice of funerary objects for Egyptian elite tombs in several eras of antiquity: the Middle and New Kingdoms, the Third Intermediate Period, and the Late Periods. Students will work with specific objects after learning generally about them, and they will carry out analyses of materials, pigments, construction methods, and erosion and degradation effects. They will create a virtual exhibition for the Museum’s website and present their results for inclusion in the museum cataloguing project.
Instructor(s): B. Bryan; S. Balachandran.

**Near Eastern Studies**
**AS.130.334. Egyptian Funerary Arts in the Archaeological Museum. 3.0 Credits.**
This class will aim to cover the production and choice of funerary objects for Egyptian elite tombs in several eras of antiquity: the Middle and New Kingdoms, the Third Intermediate Period, and the Late Periods. Students will work with specific objects after learning generally about them, and they will carry out analyses of materials, pigments, construction methods, and erosion and degradation effects. They will create a virtual exhibition for the Museum’s website and present their results for inclusion in the museum cataloguing project.
Instructor(s): B. Bryan; S. Balachandran
Area: Humanities.

**History of Science Technology**
**AS.140.320. Modernity on Display: Technology and Ideology at World’s Fairs. 3.0 Credits.**
Seminar focuses on ideological at World's Fairs over technological modernity with special emphasis upon World War II and the Cold War.
Instructor(s): A. Molella; R. Kargon
Area: Humanities, Social and Behavioral Sciences.

**AS.140.415. Thinking Through Things and Thinking Things Through. 3.0 Credits.**
Combining hands-on experience of using historical instruments with primary sources analysis, the students will reconstruct the ways in which artifacts channeled human perception of their environment.
Instructor(s): Y. Frumer
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
German Romance Languages Literatures
AS.211.330. Curating Media Artists in Residence at JHU. 3.0 Credits.
The students will be closely involved with JHU's Center for Advanced Media Studies (CAMS directed by Bernadette Wegenstein), and the Baltimore Museum of Art (curator Kristen Hileman) in preparing the BMA Black Box exhibit of Mary and Patrick Kelley’s new film, We Are Ghosts, set in a submarine: the film tells the story of life as experienced by the sailors in a U.S. submarine at the end of the second world war. Artist Mary Reid Kelley focuses on “minor aspects of life” in the submarine during non-combat — such as boredom, claustrophobia, and the effects of heavy drinking on the sailors. Included is also a restaging of Harry Truman’s announcement of the bombing of Hiroshima — told from the sailors’ point of view. While this new work will be on display in the BMA’s Black Box, Kelley’s 2016 film This is Offal (set in a morgue) will be showing at the museum. This film is centered around a dialogue between the ghost of a deceased woman, the victim of a suicide, and her animated organs. Students will also be traveling to Woodstock, NY on a field trip with professor Wegenstein for a studio visit with the artists at the beginning of the semester. Mary Reid Kelley is an artist who makes arresting, playful, and erudite videos that explore the condition of men and women throughout history. Drawing on literary and historical material, the videos involve intensive research and critical reassessments of standard historical narratives. Mary Reid Kelley is involved in every aspect of the videos’ creation—from writing the scripts (typically in highly structured poetic verse), to designing the sets, props, and costumes, to performing the leading roles—and all of the videos are produced by her and her partner, Patrick Kelley, at their private studio. Kelley is known for her feminist videos that recall the theater of the absurd and German Expressionist cinema. Please note that this class will be held as a practicum, and some of the dates and times will be flexibly adapted to the needs of the artists’ residency. If you have a very full calendar in the Spring it is best advised not to take this class.
Instructor(s): B. Wegenstein
Area: Humanities.

AS.213.322. Museums and Jews, Jews in Museums. 3.0 Credits.
This course will examine the phenomenon of the “identity” museum through case studies involving Jewish and Holocaust museums around the world. The museum boom of the last half-century has centered in large part around museums dedicated to the culture and history of particular minority groups; recent notable (and relatively local) examples include the brand new National Museum of African American History and Culture in Washington and the National Museum of American Jewish History in Philadelphia. Our understanding of the contemporary theory and practice of such museums will be based on an examination of the history of the various museological traditions that engage Jewish identity from the 19th century to the present, including the collection and display of art and antiquities, ethnographic exhibitions, history museums, and Holocaust museums. We will deal with two primary museological phenomena: first, the introduction of the “primitive other” into European modernity via ethnographic museums; second, the museological commemoration and representation of trauma, specifically of the Holocaust. We will explore these topics through historical documents, theoretical readings, and case studies including visits to nearby museums. All readings in English.
Instructor(s): S. Spinner
Area: Humanities.

AS.213.407. Museums and Identity. 3.0 Credits.
This course will explore the phenomenon of the “identity” museum through case studies involving Jewish and Holocaust museums around the world. The museum boom of the last half-century has centered in large part around museums dedicated to the culture and history of particular minority groups; recent notable (and relatively local) examples include the brand new National Museum of African American History and Culture in Washington and the National Museum of American Jewish History in Philadelphia. Our understanding of the contemporary theory and practice of such museums will be based on an examination of the history of the various museological traditions that engage Jewish identity from the 19th century to the present, including the collection and display of art and antiquities, ethnographic exhibitions, history museums, and Holocaust museums. We will deal with two primary museological phenomena: first, the introduction of the “primitive other” into European modernity via ethnographic museums; second, the museological commemoration and representation of trauma, specifically of the Holocaust. We will explore these topics through historical documents, theoretical readings, and case studies including visits to nearby museums. All readings in English.
Instructor(s): S. Spinner
Area: Humanities.

Center for Africana Studies
AS.362.110. Colonial Encounters: Artistic Responses. 3.0 Credits.
This course disrupts conventional ways of seeing, reading, and examining artistic texts. When we read a novel or study a work of art, especially that produced by white people, we tend to treat it as representative of the nation, talk about its aesthetic genius, or discuss it as reflecting its social/historical moment. Black artistic production, on the other hand, is most often treated as “protest,” as that which simply responds to a national narrative. But what would happen if we treated the experience of black people and other people of color as universal? What would happen if we treated colonialism as the dominant social and intellectual problem of our age?
Instructor(s): S. Mott
Area: Humanities, Social and Behavioral Sciences.
Music

http://www.krieger.jhu.edu/music

The Peabody Institute of The Johns Hopkins University is an internationally acclaimed music conservatory. The Peabody campus, located at historic Mount Vernon Place, is on the university shuttle bus route between Homewood campus and the medical institutions in East Baltimore. Faculty of the Peabody Institute offer classes on the Homewood campus that are open to all undergraduates.

Qualified Hopkins undergraduates may, for no extra charge, register for classes in music history, music theory, music education, recording techniques, and computer music offered on the Peabody campus. There are also limited opportunities to take private lessons and participate in ensembles.

Concerts

Homewood students are welcome to attend Peabody's many concerts and are entitled to one complimentary ticket per concert, excluding opera and dance productions. Multiple performances of the same program do not count as separate concerts. Students can order tickets or e-tickets through University Tickets, accessible through the Peabody website (http://www.peabody.jhu.edu/). To pick up will-call tickets, students need to show their Hopkins ID at the Peabody Box Office, Monday through Friday, 10 a.m. to 4 p.m. or during the hour before the concert. The Box Office is in the lower level of the Grand Arcade in the Conservatory building; call (667) 208-6620.

Private Lessons

Private lessons are available to students at varying levels of accomplishment on a musical instrument.

- Half-hour or hour lessons are offered for credit in the Peabody Conservatory for the intermediate to advanced musician.
- Non-credit lessons are available in the Peabody Preparatory, space permitting.

The annual registration fee will be waived for all JHU students. School of Arts and Sciences and Engineering students are eligible to receive a cross-registration discount of 25 percent for Preparatory private lessons by obtaining a cross-registration form from their division each semester. There is a lesson fee for KSAS and WSE undergraduate students for lessons at the Conservatory and students may check with the Registrar’s Office for the current fee.

Students wishing to take advantage of this opportunity should consult the Peabody Conservatory and/or Preparatory catalogs for more information.

Auditions for lesson assignments at the intermediate or advanced level take place at the beginning of each term. Students wishing to audition should contact the Peabody Registrar’s Office, (667) 208-6580, for information.

Students can sign up for Mattin Center instrumental practice facilities by bringing their Jcard to the office of Student Leadership & Involvement, also located in the Mattin Center.

Ensemble Membership

Membership in the Hopkins Symphony Orchestra, the Johns Hopkins University Band, and the Hopkins Glee Club, all of which rehearse and perform on the Homewood campus, is open to all university students. Membership in the Hopkins Symphony Orchestra is by audition on a space-available basis. Seating is limited, especially in the winds. Contact the HSO Office in Shriver Hall at 410-516-6542 for audition information, which can also be found online at http://www.jhu.edu/jhso/about/audition_info.html.

Participation in the Peabody-Hopkins Chorus and Peabody Singers is open to all university students upon completion of a satisfactory audition. Please contact Ensemble Coordinator Ryan Tani at rtani1@jhu.edu if you wish to schedule an audition or would like additional information.

Advanced instrumentalists who wish to be considered for membership in Peabody’s large instrumental ensembles—the Peabody Symphony Orchestra, Peabody Concert Orchestra, Peabody Wind Ensemble, Peabody Camerata (contemporary music), Peabody Improvisation and Multimedia Ensemble, and Peabody Jazz Orchestra—are welcome to take part in the placement audition process which takes place each fall during the week prior to Peabody’s registration process. In order to be given an audition slot, instrumentalists must be taking private minor lessons with a Peabody instructor, and that instructor must inform the Peabody Ensemble Office that they’ve evaluated the player’s ability to be on par with that of the student’s peers at Peabody. Occasionally exceptions to this policy have been made for players of instruments which are uncommon or currently under-represented at Peabody. Due to the fact that each of the instrumental ensembles can accommodate only a certain number of players of each instrument, placement into these ensembles is made on a space-available basis, with priority given to Peabody instrumental majors for whom participation in large ensembles is a degree requirement.

Please direct any questions regarding participation in Peabody’s large ensemble program to Ensemble Coordinator Ryan Tani at rtani1@jhu.edu.

http://krieger.jhu.edu/music/minor-requirements/

Minor in Music

The School of Arts and Sciences offers a music minor to students majoring in other fields. The minor is intended for students who have some training and background in music and wish to pursue their interest in a systematic way without getting their degree in the field. It consists of a selection of music courses, including music history, music theory, ensembles, and/or lessons at Peabody. Students must earn a grade of C- or better in all courses applied towards the minor and courses can not be taken satisfactory/unsatisfactory.

Requirements for the Music Minor

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.376.231</td>
<td>Western Classical Music</td>
<td>3</td>
</tr>
<tr>
<td>AS.376.211</td>
<td>Music Theory I</td>
<td>3</td>
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<tr>
<td>AS.376.221</td>
<td>Musicianship I</td>
<td>2</td>
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<tr>
<td>AS.376.212</td>
<td>Music Theory II</td>
<td>3</td>
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<tr>
<td>AS.376.222</td>
<td>Musicianship II</td>
<td>2</td>
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<td></td>
<td>One music history course at any level</td>
<td>3</td>
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<td>One 300- or 400-level music history course</td>
<td>3</td>
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<td></td>
<td>Applied music experience (lessons/ensembles)</td>
<td>0-2</td>
</tr>
</tbody>
</table>

Total Credits 19-21

* Two semesters of lessons or ensembles with the approval of minor advisor.

Applied Music Experience

Since the study of music should always take place in the context of practical music making, students completing the minor in music must participate in an applied music experience for at least two semesters.
Students must select an applied music experience in consultation with their advisor, who will approve the applied music experience. These experiences are not required to be for academic credit. Most students will select either private instrument lessons at Peabody or participation in an ensemble at Peabody or on the Homewood campus.

For current faculty and contact information go to http://peabody.jhu.edu/faculty

Faculty

Peabody Faculty on Homewood Campus
Suhhne Ahn
Director of Peabody at Homewood; Music Minor Advisor

Richard Giarusso
Department of Musicology: 19th- and 20th-century music, German song, Wagner, Mahler, English music, music appreciation.

Sharon Gail Levy
Department of Music Theory: Piano literature 1750–1950, music analysis, baroque counterpoint, music appreciation.

Laura Protano-Biggs
Department of Musicology: opera, operatic technologies.

David Smooke
Department of Music Theory: Song Analysis, Theories of Rhythm, Popular Music.

Stephen Stone
Department of Music Theory: Music Theory I and II

Omar Thomas
Department of Music Theory: Jazz Improvisation and Theory

Elizabeth D. Tolbert
Department of Musicology: expressive culture and intercultural aesthetics, performance, gender, ritual, ethnomusicology, music and language.

Susan Forscher Weiss
Department of Musicology (joint appointment in Romance Languages and Literatures): medieval and Renaissance music, social history, performance practice, history of instruments.

Kip Wile
Department of Music Theory: Musicianship I and II

Peabody Adjunct Faculty

Samuel Burt
Adjunct Computer Music Faculty

Joshua Fishbein
Adjunct Theory Faculty

Kevin Gift (Wendell Patrick)
Adjunct Electronic Music Production Faculty

Travis Hardaway
Adjunct Theory Faculty

Monica Lopez-Gonzalez
Adjunct Music Cognition Faculty

Paula Maust
Adjunct Music Theory Faculty

Lisa Perry
Adjunct Music Theory Faculty

Ian Sims
Adjunct Jazz Faculty

Andrew Stella
Adjunct Recording Arts Faculty

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.376.111. Rudiments of Music Theory and Musicianship. 3.0 Credits.
This course introduces written and aural music fundamentals including notation, scales, intervals, chords, rhythm, meter and sight-singing. Students will compose melodies and short pieces and complete listening projects. Course does not count towards the completion of the minor.
Instructor(s): J. Crouch; M. Rickelton; P. Maust.

AS.376.211. Music Theory I. 3.0 Credits.
Introduction to basic principles of tonal music through listening, analysis and music making. Students study melody, harmony, voice leading, figured bass and dissonance treatment, and will also undertake short composition projects. Must have taken the qualifying examination or AS.376.111. Recommended to be taken concurrently with AS.376.221.
Instructor(s): F. Chiao; L. Perry; M. Rickelton
Area: Humanities.

AS.376.212. Music Theory II. 3.0 Credits.
This course continues the aural and written work of the previous course, but focuses on chromatic harmony while continuing the study of melody, counterpoint, and figured bass. Prerequisite: Music Theory I.
Prerequisites: AS.376.211
Instructor(s): S. Stone
Area: Humanities.

AS.376.214. Music Theory III - Formal Analysis. 3.0 Credits.
An examination of the musical forms of the Common Practice Period and the logic of their structures. Forms studied will include variation, binary, rounded binary, ternary, rondo, sonata-allegro, and sonata-rondo. Recommended Course Background: AS.376.212
Instructor(s): J. Fishbein.

AS.376.215. Theory III - 20th Century. 3.0 Credits.
This course teaches compositional approaches to and analytical techniques for twentieth-century music, including modes, synthetic and exotic scales, set theory, serial theory, and geometric proportionality.
Prerequisites: AS.376.212
Instructor(s): T. Hardaway.

AS.376.216. Theory III - Counterpoint. 3.0 Credits.
A study of contrapuntal music, emphasizing composition in both the sixteenth- and eighteenth-century styles as epitomized by Palestrina and Bach.
Instructor(s): T. Hardaway.

AS.376.217. Music Theory III - Song. 3.0 Credits.
An examination of text-setting and song-writing in a variety of eras and styles. Topics will include art song, lieder, jazz standards, and pop tunes.
Instructor(s): M. Rickelton.
AS.376.221. Musicianship I. 2.0 Credits.
An introduction to basic musicianship skills. The course is divided into performance skills (sight singing, rhythm reading, basic piano, and improvisation) and aural skills (recognition of pitch, chords, rhythms, melodies, and other musical structures). Topics include minor keys and simple time signatures. Emphasis is placed on developing effective practice techniques. Pre-requisite: AS.376.111 (Rudiments of Music Theory and Musicianship) or placement exam.
Instructor(s): K. Wile.

AS.376.222. Musicianship II. 2.0 Credits.
A continuation of the skills developed Musicianship I. The course is divided into performance skills (sight singing, rhythm reading, basic piano, and improvisation) and aural skills (recognition of pitch, chords, rhythms, melodies, and other musical structures). Topics include minor keys, chromatic melody and harmony, compound time signatures, and syncopation. As in Musicianship I, emphasis is placed on developing effective practice techniques. Pre-requisite: AS.376.221 (Musicianship I) or placement exam.
Instructor(s): K. Wile.

AS.376.231. Western Classical Music. 3.0 Credits.
This course is an introduction to the rich tradition of Western "Classical" music. We will examine this music from a variety of perspectives, including: 1) its historical, intellectual, and cultural background; 2) the biographical background of its composers; 3) its stylistic context; and 4) analysis of the music itself. We will approach these perspectives through a variety of activities, such as lectures, readings, writing, exams and in-class discussion.
Instructor(s): R. Giarusso
Area: Humanities.

AS.376.242. Introduction to Popular Music. 3.0 Credits.
A survey of the stylistic features and social contexts of American popular music since the 1950s.
Instructor(s): D. Smooke; P. Mathews
Area: Humanities.

AS.376.244. Electronic Music Production. 3.0 Credits.
Students will be introduced to electronic music production techniques and software, and how both can be used to produce a wide range of genre specific results. Skills such as beat matching, intricate use of quantization, virtual instrument editing, automation, sampling, mixing, mastering, effect usage and use of plugins will be explored.
Instructor(s): K. Gift.

AS.376.245. Introduction to Sound, Audio, and Recording Arts. 3.0 Credits.
In this course we will undertake a comprehensive survey of sound, audio and the related technology. While covering sound recording from an historical perspective, we'll touch on related material in physics, music, psychology and acoustics. In lab exercises and assignments, students will have the opportunity to learn in a hands-on environment as practical applications of the lecture material are explored. Assignments will include critical listening, in addition to basic recording, editing and mixing of audio. The course will culminate in a comprehensive final project.
Instructor(s): A. Stella
Area: Humanities.

AS.376.250. Introduction to Computer Music. 3.0 Credits.
Introduction to Computer Music is an opportunity for people with no specialized training in music to explore electronic art music as a long-standing, if obscure, body of art, then to participate in creative work in the style. Participants will gain a heuristic understanding of forms of musical composition that operate outside the conventions of regular rhythm and harmony as they record and manipulate sound to sculpt it into original musical works. The lecture portion combines an historical overview of electronic music, rudiments of acoustics and musical perception, and instruction in compositional techniques and in using computers as creative musical tools. The laboratory portion, given at the Digital Media Center, serves as a workshop for creative exploration and for the completion of assigned creative projects including original works of digital sound art.
Instructor(s): S. Burt
Area: Humanities.

AS.376.252. Jazz History. 3.0 Credits.
Survey, investigation, and study of Jazz music and how it shaped American history from it's origins to current times.
Instructor(s): I. Sims
Area: Humanities.

AS.376.258. Jazz Improvisation and Theory. 3.0 Credits.
Study of the theory and practice of Jazz Improvisation. Must have taken the qualifying examination or AS.376.111.
Instructor(s): I. Sims
Area: Humanities.

AS.376.280. Creative Musical Improvisation. 3.0 Credits.
A musical performance class and workshop in which we will explore many different aspects of and approaches to creative musical improvisation through readings, lectures, recordings, videos, and personal experience. The emphasis will be placed on free improvisation, without pre-set song forms, chord progressions or other pre-determined structures. Most improvising will be done in small sub-groupings of anywhere from 2 to 5 students who will take turns performing short improvised pieces for the rest of the class and will be followed up with open discussions about the effectiveness of musical choices made by the participants. Ear training exercises and game pieces, such as John Zorn's Cobra will be used to help students gain experience and build confidence improvising in this way. This course is open to any University student who plays an instrument or sings, and is interested in gaining experience with and knowledge about free improvisation.
Instructor(s): M. Formanek
Area: Humanities.
AS.376.303. Musical Theater from Aristophanes to Leonard Bernstein. 3.0 Credits.
This course examines the birth of musical theatre from Greek tragedy through the liturgical and secular plays of the middle ages and Renaissance, to the classical and romantic singspiels, operettas, and zarzuelas of the modern era, by such figures as Aristophanes, Adam de la Hallé, Hildegard of Bingen, Angelo Poliziano, Juan del Encina, Wolfgang Amadeus Mozart, Gilbert and Sullivan, Ernesto Lecuona, Igor Stravinsky, and Kurt Weill. These will serve as a backdrop for a closer examination of the musicals of Jerome Kern, Cole Porter, George Gershwin, Irving Berlin, Richard Rodgers, Harold Arlen, Frank Loesser, Leonard Bernstein and others. In addition to studying and placing the works of these Broadway giants into a social, political, and economic context, we will study and perform from representative musicals and attend a performance at the Lyric Theatre. Student will be expected to write a capstone project.
Instructor(s): S. Weiss
Area: Humanities
Writing Intensive.

AS.376.304. Voice and Contest: Historical Approaches to Singing Competitions. 3.0 Credits.
This course examines voice contests across time. While contests such as American Idol have received widespread attention, these competitions must be understood in terms of a much broader trend towards the proliferation of music prizes, both within and outside the so-called classical music tradition. Our course examines the deep history of the current obsession with voice contests, with examples drawn from the medieval period to the current day.
Instructor(s): L. Protano Biggs
Area: Humanities, Social and Behavioral Sciences.

AS.376.305. Operatic Technologies. 3.0 Credits.
Operatic Technologies offers an introduction to opera via a series of case studies about the materials used to produce it. With a particular focus on the Italian case, we will trace issues such as how auditoriums have historically been illuminated; orchestras directed; machines used to create and sustain illusion and operas simulcast. Students will leave this course with a clear sense of how the look and feel of the operatic experience has changed over time; how technological practices established in the past continue to determine productions now, and how the cinema can be considered an extension of opera. Our course includes a visit to the cinema to see a Metropolitan Opera simulcast. Ability to read music is not required.
Instructor(s): L. Protano Biggs
Area: Humanities
Writing Intensive.

AS.376.306. Meet the Musician: Today's Classical Musician. 3.0 Credits.
"Classical music in America is dead," Slate Magazine declared online in January 2014. In this seminar, students will learn that this art form is indeed alive and well. Peabody graduate students will perform solo and small ensemble works, present original research, and participate in open discussions about musical research, performance, professional challenges, and more. Homewood students will read articles on a weekly basis prior to the lecture-recitals. In response to each lecture-recital, students will write weekly reaction papers and prepare questions for the group discussion.
Instructor(s): M. Wertheimer
Area: Humanities
Writing Intensive.

AS.376.309. Exploring American Music Through a Culture Lens. 3.0 Credits.
This course explores the richness of our American musical heritage through a cultural lens. A wide breadth of musical genres will be discussed such as jazz, r&b, rock, rap, pop, country, spirituals, gospel, polka, folk, and classical, as well as the role of music in mass socio-political movements. A spotlight will be given to artists who have successfully crossed genres in their careers such as Winton Marsalis, Louis Moreau Gottschalk, William Grant Still, Scott Joplin, and Gunther Schuller, among others.
Instructor(s): L. Kafka
Area: Humanities
Writing Intensive.

AS.376.325. Music and Migration. 3.0 Credits.
In this seminar, we will explore a wide variety of musics (art, folk, world, and popular) and how they record the movement of human communities. Students will gain an understanding of how music gives expression to both belonging to a place and to the experience of displacement arising from social, economic, geo-political, and environmental push factors. No prior musical experience necessary.
Instructor(s): E. Usner
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.376.371. Introduction to Music Cognition. 3.0 Credits.
What underlies our aesthetic response to music? How and why are we able to identify certain sounds as music? To what extent are music and natural language similar? What is it about music that evokes such powerful emotions such as happiness and sadness? What is unique to musical creativity? Examining such questions from cognitive science, neuroscience, psychology, and philosophical perspectives, this course explores relevant research and theory in the emerging domain of music perception and cognition. Students will complete a final research paper on the topic of their choice that integrates the course material.
Instructor(s): M. Lopez-Gonzalez
Area: Natural Sciences, Social and Behavioral Sciences.

AS.376.372. Topics in Music Cognition. 3.0 Credits.
This course explores the similarities and differences between music and language, the effects of musical training on cognitive development, and the expressive power of music, with an introduction to music and its role in film. We will read relevant research and theory on these topics from cognitive science, neuroscience, psychology, musicology, and philosophical perspectives.
Instructor(s): M. Lopez-Gonzalez
Area: Natural Sciences, Social and Behavioral Sciences.

AS.376.404. History of Musical Instruments. 3.0 Credits.
The history, technology, and performance of Western European musical instruments, their precursors, and their non-western counterparts, addressed by experts and explored on visits to historic collections. Recommended prerequisite: AS.376.231 "Western Classical Music"
Instructor(s): S. Weiss
Area: Humanities
Writing Intensive.

AS.376.407. Music and Evolution. 3.0 Credits.
This course will examine the bio-cultural evolution of music in light of recent interdisciplinary research on the social bases of human cognitive evolution, and explore its implications for current debates in musicology, ethno- musicology, psychology of music, and human cognitive evolution.
Instructor(s): E. Tolbert
Area: Humanities
Writing Intensive.
AS.376.428. 6 Mozart Operas. 3.0 Credits.
Lotharios and lovers, Turkish pashas and harem girls, churlish masters and wily servants, enraged women, bird-catchers, Italian soldiers disguised as Albanians, a Cretan King, and the Queen of the Night. These characters and many others populate the worlds created in the operas of Wolfgang Amadeus Mozart. This course focuses on six of Mozart's most enduring operatic works: Idomeneo, The Abduction from the Seraglio, The Magic Flute, The Marriage of Figaro, Don Giovanni, and Così fan tutte. It explores the origins of the stories and characters of these operas, and the musical structures Mozart developed to convey these narratives in music, in the genres of opera seria, Singspiel, and opera buffa. In examining these operas, students will investigate Mozart's collaborations with librettists, the singers and theatrical venues for which he composed, and the patrons and audiences he hoped to appeal to with these works. Discussions of each opera will also turn to their performance, considering documentation of their premieres and nineteenth-century revivals, and more recent stage and cinematic productions available on DVD and online by directors including Joseph Losey, Ingmar Bergman, Peter Sellars, Jonathan Miller, Robert Wilson, and Julie Taymor, as well as in the movie Amadeus, to compare how interpretations of the opera have differed over time and between directors.
Instructor(s): J. Walden
Area: Humanities
Writing Intensive.

AS.376.502. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): S. Weiss.

AS.376.505. Music Internship. 1.0 Credit.
Instructor(s): S. Stone.

Cross Listed Courses

History
AS.100.257. From Voice to Parchment: Media and Communication before the Printing Press, 800-1440. 3.0 Credits.
Epic traditions, call to Crusade, public curses, music of the troubadours: this course examines oral tradition and music—the "viral media" of pre-modern Europe—while tracing the impact of new recording technologies: early musical notation, manuscripts, and book production.
Instructor(s): J. Phillips
Area: Humanities, Social and Behavioral Sciences.

AS.100.341. Historical Performance in the Age of the Troubadours and Trouvères. 3.0 Credits.
This seminar examines the practices of musical and theatrical performance in the era of the trouvères and troubadours, "the long thirteenth century." We look at the context in which trouvère song was composed, performed, and transmitted in manuscript form. Students will also sing trouvère music, and while a knowledge of musical notation is not strictly necessary, it is helpful. The culmination of the course will be a concert and recording session. A final paper based on primary sources about an aspect of medieval performance is required.
Instructor(s): J. Phillips
Area: Humanities, Social and Behavioral Sciences.

German Romance Languages Literatures
AS.211.364. Drama Queens: Opera, Gender, and the Poetics of Excess. 3.0 Credits.
What is a drama queen? According to the Oxford English Dictionary, a drama queen is "a person who is prone to exaggeratedly dramatic behaviour" and "a person who thrives on being the centre of attention." While drama queens exist among us, the world of opera is certainly one of their ideal environments. Echoing back to their tragic fates, the powerful voices of Dido, Medea, Violetta, and Tosca never ceased to affect their empathetic public. In fact, excess and overreactions are two main features of the operatic experience both on stage and in the audience. By focusing on the ways in which operatic characters are brought to life, the course explores the social, political, and gender dynamics that inform the melodramatic imagination. Students will have the opportunity to attend live HD broadcasts of Verdi’s La Traviata and Tchaikovsky's Eugene Onegin from the Metropolitan Opera. No musical skills required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.211.400. Topics in Romance Literatures. 3.0 Credits.
This year’s "Topics in Romance Literatures" course is entitled "Voicing the Body: Sex and Desire in Medieval Poetry." If you think that medieval poetry is all about idealized love and spiritual sublimation, then this course will make you change your mind. We will explore works and authors from all across Europe, from the erotic "Carmina burana" to the voluptuous poetry of French troubadours and trouvères, from German love poetry to the sensual songs of Spain and the passionate verses of Italian poets such as Dante and Petrarch. The course will explore the ways in which medieval poets sing about bodily passions and voice the lovers’ desire, with a special focus on the ways in which poetry interacted with music and was transmitted through music. The class is taught in English and all readings will be available in English. Students in Romance Languages (Italian, French, Spanish), depending on their language skills, will have the opportunity to work on the originals. A special reading list will be set up for graduate students who will take the course.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.211.472. Barbers and Countesses: Conflict and Change in the Figaro Trilogy from the Age of Mozart to the 20th Century. 3.0 Credits.
2016 marks the bicentennial of Rossini's irreverent masterwork The Barber of Seville, which premiered in Rome in February 1816. Thirty years earlier, in 1786, Mozart's The Marriage of Figaro had opened in Vienna. The two operas, based on the first two plays of Beaumarchais' controversial "Figaro trilogy," stage conflicts of class and gender, challenging the assumptions of the aristocracy as well as the ludicrous pretensions of the raising bourgeoisie. The same themes inform the post-modern portrayal of the past in John Corigliano's The Ghosts of Versailles (1991), which ideally completes the musical afterlife of the trilogy. By studying how the plays were adapted to the opera stage within their different cultural and historical contexts, the course will explore the representation of the ideological, social, and political turmoil that, eventually, culminated in the French Revolution. The course will also include field trips and screenings of movies such as Stanley Kubrick's Barry Lyndon (1975) and Milos Forman's Amadeus (1984). This course may be used to satisfy major requirements in both the French and Italian majors.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.
This course takes as its point of departure Klopstock’s efforts to model German poetry after music—“the harmony of the spheres”—which served as the impetus for Goethe’s and Schiller’s poetry and Hölderlin’s late hymns. We will examine his experiments with verse form and his notion of interiority as the backdrop for Herder’s theory of the Volkslied as a popular genre that joins word and music and expresses the soul of a nation. Music and poetry will emerge on the one hand as the glue that binds a community and on the other as a disruptive force that isolates its members. Its significance as a figure if not vehicle for transcendence will return again and again in works as varied as Achim von Arnim and Brentano’s Des Knaben Wunderhorn, Kleist’s “Heilige Cäcilia,” Hölderlin’s poetological writings, Schopenhauer’s Die Welt als Wille und Vorstellung, and Nietzsche’s Geburt der Tragödie among other texts.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.125. Freshman Seminar: Dangerous Liaisons: Words and Music Through the Ages. 3.0 Credits.
How do music and words interact? Do words have a priority on music or vice versa? Does music need words to be understood and interpreted? Are words filled with meaning by music? A variety of readings and musical examples will be discussed, including genres as diverse as medieval songs, madrigals, Romantic Lieder, opera, the American musical, and contemporary pop music. The seminar will include field trips to the Baltimore Museum of Art, the Meyerhoff Symphony Hall, the Peabody Institute, and the Evergreen Museum and Library. Students will also have the opportunity to attend a live HD broadcast of Mozart’s Don Giovanni from the Metropolitan Opera. No musical skills required; strong doses of curiosity most welcome.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.333. Shakespeare on the Opera Stage. 3.0 Credits.
From Rossini’s Otello to Cole Porter’s Kiss me Kate, from Verdi’s Macbeth to Leonard Bernstein’s West Side Story, the works of William Shakespeare have been an extraordinary source of inspiration for musical theatre. By exploring operatic adaptations of Shakespeare in different periods and contexts, this course will examine the ways in which composers and librettists have interpreted and reshaped the plays. The course, primarily focused on the 19th century Italian reception of Shakespeare and, in particular, on operas by Rossini and Verdi, will also consider the phenomenon within a broad transnational perspective up to include contemporary opera and musical.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.214.377. Gendered Voices. 3.0 Credits.
The course will explore the notion of ‘voice’ in order to show how poetry, literature, philosophy, and music have been dealing with it throughout the ages. In particular, by focusing on classical figures such as the Sirens, Circe and Echo, as well as by considering the seminal discussions of the ‘voice’ in Plato and Aristotle, the course will address the gendered nature of the voice as a tool to seduce and manipulate the human mind. More specifically, the course will discuss the ways in which male and female voices embody different functions. Examples to be analyzed include texts by Dante, Petrarch, Ariosto, and Tasso. The course will also consider later rewritings of myths concerned with the voice such as Giuseppe Tomasi di Lampedusa’s The Siren and Italo Calvino’s A King Listens.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

The course aims to outline the musical reception of Michelangelo’s poems from the 16th to the 21st century. Moving from a critical introduction to Michelangelo’s Rime, the course will address Michelangelo’s own ideas on music and the few musical settings of his poems by contemporary composers. The course will turn then to the Post-Romantic renaissance of Michelangelo’s myth as the context within which the main bulk of musical settings of the artist’s poems was produced. What did composers such as Wolf, Britten, Dallapiccola, Shostakovich and Reimann find in Michelangelo’s poetry? Through a close reading of the poems chosen by the composers, the course will explore the biographical, philosophical and socio-historical implications suggested by the different musical settings. No training in music performance or theory is required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

Although naturally and historically intertwined, music and poetry tended to be described in the early modern period as competing rather than interacting. By looking at both literary and theoretical texts, the seminar aims to explore the ways in which this controversial relation is revealed by the interplay of poetics, rhetoric, and music theory. Reading materials will include classical sources (e.g. Plato, Aristotle, Ps.-Longinus, Quintilian) and their early modern interpretations. Special attention will be given to Torquato Tasso, Giambattista Marino, and Giambattista Doni, whose works will be also discussed in the light of the contemporary development of musical genres (e.g. madrigals, opera). No musical skills required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.
Sociology

**AS.230.371. Sociology of Rock. 3.0 Credits.**

This course examines the history and dynamics of rock music using key concepts and perspectives from sociology. The course is divided into four sections, each of which examines the phenomenon of rock music from a different analytical perspective. The first section on the origins of rock looks at the confluence of developments in post-war America, especially in terms of race, class and generational change, which produced this new musical form. The second section, “Rock as Cultural Production,” looks at all aspects of the rock “field,” not just artists and audiences but record labels, stores, DJ’s and radio stations, the music press and journalists, performance venues. The third section examines rock as a force for social change and protest from the 1960s until present, and the final section examines the performative aspects of rock as a kind of “interaction ritual” with its own microsociological dynamics.

Instructor(s): T. Nelson
Area: Social and Behavioral Sciences
Writing Intensive.

### Natural Sciences Area Major

The Natural Sciences Area major allows students to combine appropriate upper-level courses in two different areas of natural science. Students may bridge biology and chemistry, chemistry and physics, or some other combination as long as the curriculum forms a coherent whole. The major prepares students for careers in medicine, dentistry, or veterinary science, if the introductory courses chosen by the student include those prescribed for admission to these professional schools.

Students selecting the Natural Sciences Area major can also go on to graduate study in natural science, though they may have to take some remedial work in graduate school, if their undergraduate program does not include courses usually required by a traditional major in a particular subject.

### Requirements for a B.A. Degree

Also see Requirements of a Bachelor’s Degree (p. 7).

Requirements of the natural sciences area major are:

<table>
<thead>
<tr>
<th>Science and Math Core Courses</th>
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<tbody>
<tr>
<td>AS.110.106 Calculus I (Biology and Social Sciences)</td>
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<tr>
<td>or AS.110.108 Calculus I</td>
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</tr>
<tr>
<td>AS.110.107 Calculus II (For Biological and Social Science)</td>
<td>4</td>
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<tr>
<td>or AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
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<tr>
<td>or AS.110.113 Honors Single Variable Calculus</td>
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<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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<tr>
<td>&amp; AS.030.105 Introductory Chemistry Laboratory I</td>
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<tr>
<td>AS.030.102 Introductory Chemistry II</td>
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<tr>
<td>&amp; AS.030.106 Introductory Chemistry Laboratory II</td>
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<tr>
<td>or AS.030.103 Applied Chemical Equilibrium and Reactivity w/lab</td>
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<tr>
<td>AS.171.101 General Physics: Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.103 General Physics I for Biological Science Majors</td>
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<tr>
<td>or AS.171.107 General Physics for Physical Sciences Majors (AL)</td>
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<tr>
<td>AS.173.111 General Physics Laboratory I</td>
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<tr>
<td>AS.171.102 General Physics: Physical Science Major II</td>
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<tr>
<td>or AS.171.104 General Physics/Biology Majors II</td>
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<tr>
<td>or AS.171.108 General Physics for Physical Science Majors (AL)</td>
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<tr>
<td>AS.173.112 General Physics Laboratory II</td>
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</tbody>
</table>

### Science Electives

- Natural science or quantitative credits at any level * 20
- At least five courses of upper level natural science electives at the 300- or 400-level in at most 2 departments ** 15

### Humanities and Social Science Electives

- Humanities or social science credits at any level *** 12
- At least four courses of humanities or social science electives at the 300- or 400-level in at most 2 departments **** 12

* While students typically take these credits at the 100- or 200-level, 300- or 400-level N or Q credits not used to fulfill the upper level science elective credits may be used.

** Laboratory, research, internship, independent study, and summer courses outside JHU may not be used. Permission to count courses from more than two departments is often granted if the material involved constitutes a coherent program (for example, biochemistry courses from Biology, Biophysics and Chemistry). No more than two (2) courses and no more than six (6) credits may be taken in appropriate areas of engineering, mathematics, applied math and statistics, or (N)-coded psychology.

*** At least 9 credits must be in the humanities and at least 9 credits must be in the social sciences.

**** While students typically take these credits at the 100- or 200-level, 300- or 400-level H or S credits not used to fulfill the upper level humanities or social science electives may be used.

***** These courses must be JHU courses. Summer courses outside JHU, intersession, research, internship, independent study, Bloomberg School of Public Health, Carey Business School, and the School of Education courses are not allowed.

### Minimum GPA Standards

- Students must maintain an overall grade point average of 2.0 in their major.
- Satisfactory/unsatisfactory graded courses may not count towards major requirements.

### Near Eastern Studies

http://neareast.jhu.edu/

The Department of Near Eastern Studies offers programs in four main areas: Egyptology, Assyriology, Northwest Semitic languages and literatures (including the Hebrew Bible), and Near Eastern Archaeology. The department approaches Near Eastern civilizations primarily through their own records, and language study is therefore an important part of the curriculum. However, many undergraduate courses require no knowledge of foreign languages and any interested student may take them.

### Facilities

The university's Milton S. Eisenhower Library contains an outstanding collection of books and journals in the branches of Near Eastern studies pursued by the department. The Johns Hopkins Archaeological Museum has a collection of Near Eastern antiquities, including excellent study collections of Egyptian artifacts and Palestinian pottery. The Baltimore-Washington area is especially rich in library and museum facilities. Of special interest to students of the Near East are the Walters Art Museum, the Smithsonian Institution, and the Library of Congress.
Undergraduate Programs

The ancient Near East is where history begins. It is where the first crops were sown, the first towns built, and where writing was first invented. The origins of Western culture are to be found in its great civilizations, from the three great monotheistic religions—Christianity, Islam, and Judaism—to everyday aspects of our life that we take for granted, such as the alphabet and marking time by hours and minutes. The Near Eastern studies major can be the focal point of a broad liberal arts education, as well as a basis for graduate study. An undergraduate major can specialize in one of the four main areas of specialization of the department - Egyptology, Assyriology, Northwest Semitic languages and literatures (including the Hebrew Bible), and Near Eastern Archaeology - or in the civilizations of the ancient Near East in general.

Near Eastern Studies Major Requirements

Also see Requirements for a Bachelor’s Degree (p. 7).

Students must earn a “C-” or higher grade in all courses used to satisfy major requirements and courses may not be taken satisfactory/unsatisfactory.

<table>
<thead>
<tr>
<th>Two Introductory Courses (Select two of the following five):</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.130.101 Ancient Near Eastern Civilizations or AS.130.12 Gods and Monsters in Ancient Egypt or AS.130.13 Pyramids, Temples and Tombs or AS.130.14 Hebrew Bible / Old Testament or AS.130.17 Diplomacy and Conflict in the Ancient Middle East</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Two Upper-Level Core Courses (Select two of the following):</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.130.301 History of Ancient Syria-Palestine or AS.130.30 History: Ancient Syria-Palestine II or AS.130.32 Seminar Near Eastern History: Egypt or AS.130.31 History of Egypt from ca. 1200-30 BCE or AS.130.300 History Ancient Mesopotamia when offered or AS.130.382 History Ancient Mesopotamia II when offered</td>
<td></td>
</tr>
</tbody>
</table>

| Four 300-level courses in a focus area of art and archaeology, history and culture, or language* | 12 |
| Three Near Eastern Studies courses at any level | 9 |
| AS.130.420 Seminar in Research Methods in Near Eastern Studies: (Auto)biography in the Ancient Near East | 3 |

Total Credits: 36

Note: AS.130.420 - This writing intensive seminar covers different selected topics in order help students develop skills in specific research areas such as critical reading, analysis, interpretation, and writing. Specific topics vary each semester. AS.130.420 is required of NES Majors, but is also open to non-majors who have taken at least one 100-level and one 300-level Near Eastern Civilization course, or with the consent of the instructor. It is recommended that NES majors take the class during their sophomore or junior years.

* Students pursuing the language focus area need to select four courses from the following languages: Akkadian, Arabic, Ancient Egyptian, Biblical Hebrew, Modern Hebrew or Sumerian. These may not be 300-level.

Honors

Those seniors wishing to be considered for departmental honors may choose to write a senior thesis. A student must maintain a 3.5 GPA in the major (through the junior year) to be eligible for departmental honors. It is advisable for such students to contact a faculty member to supervise the thesis during the spring semester of their junior year. The student should then register for two semesters of independent study in the senior year.

Sample Program

A typical path toward degree completion might include the following sequence of courses:

<p>| Freshman |</p>
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Near Eastern elective at any level #1</td>
<td>3</td>
<td>Required intro course #1</td>
<td>3</td>
</tr>
<tr>
<td>Required intro course #2</td>
<td>3</td>
<td>Near Eastern elective at any level #2</td>
<td>3</td>
</tr>
</tbody>
</table>

<p>| Sophomore |</p>
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course in focus area at any level #1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| Junior |</p>
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required upper level core course #1</td>
<td>3</td>
<td>Required upper level core course #2</td>
<td>3</td>
</tr>
</tbody>
</table>

<p>| Senior |</p>
<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course in focus area at any level #3</td>
<td>3</td>
<td></td>
<td></td>
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</tbody>
</table>

| Near Eastern elective at any level #3 | 3 |

Total Credits: 36

Near Eastern Studies Minor Requirements

To minor in Near Eastern Studies, a student must complete six courses (18 credits) from among the department’s offerings. One of these courses must be from among the Department’s regularly offered introductory courses to the ancient Near East: 130.101 Ancient Near Eastern Civilizations; 130.126 Gods and Monsters in Ancient Egypt; 130.135 Pyramids, Temples and Tombs. The remaining five courses are selected, in consultation with the director of undergraduate studies in Near Eastern Studies, to meet the needs and interests of the student. Minors may wish to survey all of the different fields covered by the department or to focus on a single ancient language, culture, or methodology in more depth.

Students must earn a “C-” or higher grade in all courses used to satisfy minor requirements and courses may not be taken satisfactory/unsatisfactory.

| AS.130.101 Ancient Near Eastern Civilizations | 3 |
or AS.130.126 Gods and Monsters in Ancient Egypt
or AS.130.135 Pyramids, Temples and Tombs
or AS.130.140 Hebrew Bible / Old Testament
or AS.130.170 Diplomacy and Conflict in the Ancient Middle East

5 Additional Near Eastern Studies Courses 15
Total Credits 18

Graduate Program
The graduate program, the oldest of its kind in the nation, is designed to train professional scholars and teachers in the above-mentioned areas. The courses listed below may be modified in particular years to suit the needs of students currently in residence. Reading and private study under the direction of the faculty are considered as important as work in class. The seminars allow small groups of students and faculty to engage in close study of special problems. As the program is intended to lead to the Ph.D., students are admitted as candidates for the M.A. only in unusual cases.

Requirements for the Ph.D. Degree
Students working full time toward the Ph.D. may expect to do three to four years of course work, after which comprehensive examinations must be written before work on the dissertation begins. The examinations cover a student's major and minor fields of concentration. After passing these examinations, the student, in consultation with the faculty, prepares a dissertation proposal for faculty consideration and then proceeds to write the dissertation.

An ability to read scholarly French and German is necessary, and an examination in one of these must be passed within the first semester of residence at Hopkins. The examination in the other may be delayed not more than one year. Some command of Greek and Latin is necessary to pursue biblical studies.

Financial Aid
The department awards most students admitted to the Ph.D. program who are in need of financial aid a basic annual fellowship covering full tuition and a full stipend for living expenses for up to five years. For some of this period, the department's support may be extended by the various competitive awards available to advanced students within the university. When appropriate, the department will award travel stipends for graduate students to participate in archaeological excavations in the Near East or visit collections in this country and abroad.

For further information on graduate study in Near Eastern Studies, visit the departmental website at http://neareast.jhu.edu/.

For current faculty and contact information go to http://neareast.jhu.edu/people/

Faculty
Chair
Glenn M. Schwartz
Chair Professor of Archaeology. Near Eastern archaeology.

Professors
Betsy M. Bryan
Alexander Badawy Chair in Egyptian Art and Archaeology. Egyptian art and archaeology. Egyptology.

Marian Feldman

Ancient Near East and Eastern Mediterranean Art
Richard Jasnow
Egyptology.

Theodore J. Lewis
Blum-Iwry Professor. Hebrew Bible, Northwest Semitic philology and religion.

Associate Professors
Paul Delnero
Assyriology

Michael Harrower
Archaeology

Jacob Lauinger
Assyriology

Professors Emeriti
Jerrold S. Cooper
W.W. Spence Professor Emeritus of Semitic Languages.

P. Kyle McCarter
William Foxwell Albright Professor Emeritus

Lecturers
Sanchita Balachandran
Lecturer. museum studies.

Ellen Robbins
Lecturer. Hebrew Bible.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.130.101. Ancient Near Eastern Civilizations. 3.0 Credits.
Review of important issues in ancient Near Eastern history and culture from the Neolithic era to the Persian period. Included will be an examination of the Neolithic agricultural revolution, the emergence of cities, states and writing, and formation of empires. Cultures such as Sumer and Akkad, Egypt, the Hittites, Israelites, Assyrians, Babylonians, and Persians will be discussed.
Instructor(s): G. Schwartz
Area: Humanities.

AS.130.102. From the Neanderthals to the Neolithic. 3.0 Credits.
Emphasizing theories about human biological and cultural development, this course consists of an in-depth survey of Neanderthal morphology and culture, a brief discussion of evolutionary theory and our fossil ancestors, and concludes with an exploration of the mechanisms and results of the shift from hunting and gathering to farming. (Course formerly known as Introduction: Human Prehistory.) Cross-listed with Anthropology.
Instructor(s): S. McCarter
Area: Humanities.
AS.130.105. Freshman Seminar: Sex, Drugs, and Rock & Roll in Ancient Egypt. 3.0 Credits.

This seminar explores the social roles of sexuality, alcohol, other drugs, music, fragrance, and sensuality in secular and religious areas of Egyptian life, largely but not exclusively during the New Kingdom, ca. 1500 to 1000 B.C. The ancient attitudes towards these elements will be explored through the ancient textual sources in translation and the artistic representations.

Instructor(s): B. Bryan
Area: Humanities
Writing Intensive.

AS.130.106. Freshman Seminar: Ancient Empires. 3.0 Credits.

Freshman Only A case-study approach to the political, social, and cultural history of one of the ancient Near Eastern states commonly described as an "empire," such as the Akkadian Empire, the Neo-Assyrian Empire, the Neo-Babylonian Empire, or the Achaemenid (Persian) Empire. Individual classes mix a discussion of theoretical issues relevant to the study of ancient empires with close attention to primary sources.

Instructor(s): J. Lauinger
Area: Humanities
Writing Intensive.

AS.130.108. Freshman Seminar: Demons & Doctors: Magic and Medicine in the Ancient Near East. 3.0 Credits.

This course will provide an introduction to the magical and medical arts of ancient Mesopotamia and Syria-Palestine by engaging with ritual texts dealing with disease, exorcisms, sorcery, and harmful ghosts.

Instructor(s): E. Guinn-Villareal
Area: Humanities
Writing Intensive.

AS.130.109. Freshman Seminar: Ancient Homes and Houses. 3.0 Credits.

What will your bedroom tell future archaeologists? What can ancient houses tell archaeologists of past societies? This course explores methods/theories of Household Archaeology in the Near East and beyond.

Instructor(s): J. Swerida
Area: Humanities
Writing Intensive.

AS.130.110. Introduction To Archaeology. 3.0 Credits.

An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.

Instructor(s): E. Anderson
Area: Humanities, Social and Behavioral Sciences.

AS.130.111. Freshman Seminar: Cleopatra's Egypt. 3.0 Credits.

Egypt in the time of Cleopatra was a fascinating mix of peoples and cultures. Jews, Greeks, and other ethnic groups lived in this unique landscape along with the native Egyptians. In this class we will consider the rich civilization and complex history of Egypt during the reign of this legendary Queen.

Instructor(s): R. Jasnow
Area: Humanities
Writing Intensive.

AS.130.116. Freshman Seminar: Ritual and Magic in Ancient Egypt. 3.0 Credits.

This course will serve to introduce students to the study of religion, ritual and magic through the lens of a specific culture: ancient Egypt. Throughout the course students will be introduced to ancient Egyptian culture and will interact with Egyptian texts and artifacts, including those found in the collections of the Johns Hopkins Archaeological Museum, in order to illustrate key concepts.

Instructor(s): M. Fraser
Area: Humanities.

AS.130.122. Freshman Seminar: The Archaeology of Death, Burial, and the Human Skeleton. 3.0 Credits.

This course will introduce students to the archaeological investigation of past human populations through their mortuary and physical human remains. To this end, major theories and methodologies will be introduced, along with pertinent case studies for discussion.

Instructor(s): C. Brinker
Area: Humanities.

AS.130.126. Gods and Monsters in Ancient Egypt. 3.0 Credits.

To provide a basic introduction to Egyptian Religion, with a special focus on the nature of the gods and how humans interact with them. We will devote particular time to the Book of the Dead and to the "magical" aspects of religion designed for protective purposes.

Instructor(s): R. Jasnow
Area: Humanities.

AS.130.127. A Good Scribe & Learned Man: Wisdom & Knowledge in Ancient Egypt. 3.0 Credits.

Already in Antiquity, the Egyptians had a reputation for wisdom and "secret" knowledge. But what was the reality behind this reputation? Who was a "wise man" or "wise woman" in Egypt? How did they organize and teach scientific ideas and concepts? How did they compose, maintain, and transmit the "books" containing their canon of knowledge? From the abundant ethical, scientific, literary, magical, and religious writings of the Egyptians we will attempt to understand what wisdom and knowledge meant to the Ancient Egyptians.

Instructor(s): R. Jasnow
Area: Humanities
Writing Intensive.

AS.130.131. It's Alive! Statues in Ancient Egypt. 3.0 Credits.

In this course we will explore the magical and religious aspects of statues, and magic in ancient Egypt, temples and tombs, and funerary beliefs. In order for students to directly analyze statues, we will take advantage of Baltimore's museums and visit collections of Egyptian art throughout the semester.

Instructor(s): T. Prakash
Area: Humanities.
AS.130.135. Pyramids, Temples and Tombs. 3.0 Credits.
The introduction to the monuments and culture of Egypt from 3500 B.C. to 100 A.D. From the pyramids at Giza to Hellenistic Alexandria, this course surveys in slide illustrated lectures the remains of one of the world's greatest early cultures.
Instructor(s): B. Bryan
Area: Humanities
Writing Intensive.

AS.130.140. Hebrew Bible / Old Testament. 3.0 Credits.
The Bible is arguably the most read and yet most misinterpreted book of all time, one of the most influential and yet most misapplied work of literature. The Hebrew Bible (Old Testament) is Scripture to Jews and Christians yet also a rich collection of literature with numerous literary genres that has been highly influential on secular Western culture. At its core, it is our most important literary source that (when wed with archaeology) helps us to understand the people and culture of Iron Age Israel and Judah. This is an introductory course surveying of the books of the Hebrew Bible (Old Testament) giving primary attention to the religious ideas they contain and the ancient contexts in which they were composed. Topics include: The Academic Study of Religion, Ancient Creation Accounts, Ancestral Religion, The Exodus and Moses, Covenant, Tribalism and Monarchy, The Ideology of Kingship, Prophecy, Priestly Sources, Psalms, Wisdom Literature, and Apocalyptic Thought.
Instructor(s): T. Lewis
Area: Humanities.

AS.130.170. Diplomacy and Conflict in the Ancient Middle East. 3.0 Credits.
The Middle East is home to the invention of agriculture, cities, and writing. It is also in the Middle East that we find evidence of humanity’s earliest diplomatic activity in, for instance, the actual letters sent by ancient kings to one another; the treaties drawn up after their conflicts, and the inscriptions that commemorate their conquests. In this course, we examine texts such as these to explore questions such as: How do we characterize the international system of the ancient Middle East? Does this system change over the approximately two millennia for which we have documentation? Is it better to approach ancient diplomacy through present-day eyes or in the context of ancient world-views? Is an understanding of diplomacy in the ancient Middle East relevant to our understanding of modern international relations? All texts read in translation.
Instructor(s): J. Lauinger
Area: Humanities.

AS.130.174. Scientists and Soothsayers: The Pursuit of Knowledge in Ancient Egypt. 3.0 Credits.
The ancient world viewed Egypt as a repository of wisdom and learning, and even today, Egypt possesses in the modern consciousness a reputation for secret knowledge. From within Egypt, a diverse corpus of texts meant to record and transmit knowledge have survived and attest to Egyptian “scholarship.” This course will focus on what kinds of knowledge belonged to this written tradition (3000 BCE to 300 CE) and how those texts reflected broader social and cultural norms. This course will also consider, where relevant, the relationship between the intellectual traditions of Egypt and other societies of the ancient world, particularly Greece and Mesopotamia. Strong correlations between the Egyptian material and modern intellectual and scientific traditions, such as mathematics, astronomy, and medicine exist; but magic, divination, and religion were often treated in the same systematic, critical manner by the Egyptians. Thus the course will challenge modern understandings of science, and modern dichotomies such as rational versus irrational. After a brief introduction to Egypt, the first few weeks will concern who created these texts, who had access to them, and their physical and intellectual milieu. Then, each week will cover a particular area of knowledge, its primary sources, social and multicultural context, and its relationship to the theoretical themes of the course.
Instructor(s): K. Davis
Area: Humanities.

AS.130.177. World Prehistory: An Anthropological Perspective. 3.0 Credits.
How and why did our nomadic hunting and gathering ancestors become farmers? What led agricultural societies to build cities, develop writing, religious institutions, wage war, and trade for exotic goods? This course surveys prehistory and ancient history from the origins of human culture to the emergence civilization. Although prehistory and ancient history yield evidence of tremendous cultural diversity, this course emphasizes common elements of past human experience, culture, and culture change. These include the origins of modern humans and their adjustment to a variety of post-ice age environments, shifts from hunting and gathering to agricultural lifeways, and the initial development of the world’s earliest cities and civilizations.
Instructor(s): R. Wanner
Area: Humanities, Social and Behavioral Sciences.

AS.130.202. Ancient Mythology. 3.0 Credits.
This course explores the mythology of the ancient Near East from the invention of writing in Sumer in 3000 B.C. until the conquest of Alexander the Great near the end of the first millennium B.C. Mythological texts from Mesopotamia, Egypt, Anatolia, the Levant, and the Bible will be read from a comparative perspective. Special attention is paid to the origin and development of the epic, culminating in the great Epic of Gilgamesh, but considerable time is also given to the vast mythological and historical literature, and such diverse genres as love poetry, proverb, humorous dialogues, Omens, and legal and medical texts. All readings are in English translation.
Instructor(s): P. Delnero
Area: Humanities.
AS.130.203. Archaeology of Africa: From Human Origins to the Emergence of Civilizations. 3.0 Credits.
This course examines Africa’s ancient past from the emergence of biologically modern humans, ancient hunter-gatherers, the earliest animal herding and farming populations, to cities and civilizations. While Egypt plays an undeniably central role in world history, this course concentrates in particular on ancient geographies other than Egypt.
Instructor(s): M. Harrower
Area: Humanities.

AS.130.213. Introduction to Ancient Egyptian Art. 3.0 Credits.
This class is a combination of illustrated lecture and discussion, punctuated with visits to museums with Egyptian collections. Participants must be able to join at least one overnight trip to New York and/or Boston (weekend) and be available for two half day visits to Philadelphia and Washington, D.C. or elsewhere (TBA as best for participants), in addition to visiting Baltimore institutions with the class as part of the course. Discussion of sculpture will take place in front of the objects, so attendance is important for the visits.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.216. History of the Jews in Modern Times, from the Middle Ages to 1917. 3.0 Credits.
A broad survey of the significant political and cultural dynamics of Jewish history in the Medieval, Early-Modern, and Modern Eras.
Instructor(s): D. Katz
Area: Humanities.

AS.130.243. Hammurabi in the Digital Age: Digital Humanities and the Ancient Middle East. 3.0 Credits.
The world’s earliest poetry, cities, and empires all hail from the ancient Near East, but the remains of its remarkable cultures are under direct threat by the current conflicts in the Middle East. Digital technologies can help us to study, preserve, and recreate the artifacts that remain, and this class combines the use of such technologies with the study of the ancient world, offering students the chance to critically engage with modern scholarship methods and create their own digital resources, as well as gain familiarity with key themes and features of the ancient Near East, including urbanization, internationalism, and literature.
Instructor(s): M. Lewis
Area: Humanities.

AS.130.249. Sorcerers, Warriors and Femmes Fatales: Intro to Ancient Egyptian Literature. 3.0 Credits.
This course explores the ancient Egyptian literature of the first millennium BCE and the Roman Era: stories of magic, epic battles, animal fables, and even cultic sex hymns.
Instructor(s): M. Escolano Poveda
Area: Humanities.

AS.130.252. New Kingdom Egypt: Empire and Cosmopolitanism. 3.0 Credits.
This class surveys the history and art of Egypt empire period when pharaoh ruled over an area reaching from the Sudan to the north of Syria. Tutankhamun, Akhenaten, and Ramesses the Great represent the period, and the class will study how Egypt’s interaction outside its borders affected the political, social, and artistic environment at home and abroad.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.259. Ancient Science. 3.0 Credits.
A survey of scientific practices and technological innovations in the ancient world, including astronomy, medicine, law, and divination. Special attention will be devoted to the relationship between magic and science during the periods covered.
Instructor(s): P. Delnero
Area: Humanities, Social and Behavioral Sciences.

AS.130.300. History Anc Mesopotamia. 3.0 Credits.
A survey of the history of Sumer, Babylonia, and Assyria.
Instructor(s): P. Delnero
Area: Humanities.

AS.130.301. History of Ancient Syria-Palestine. 3.0 Credits.
A survey of the history of Ancient Syria and Canaan, including Ancient Israel.
Instructor(s): J. Lauinger
Area: Humanities.

AS.130.302. History: Ancient Syria-Palestine II. 3.0 Credits.
A survey of the history of Ancient Syria and Cannan, including ancient Israel. Taught with AS.134.661. Cross-listed with Jewish Studies.
Instructor(s): P. McCarter
Area: Humanities
Writing Intensive.

AS.130.303. Seminar Near Eastern History. Egypt. 3.0 Credits.
This class is one of the upper level choices for majors in Near Eastern Studies. It includes Graduate Students. Taught jointly with AS.131.600
Instructor(s): B. Bryan
Area: Humanities
Writing Intensive.

AS.130.312. Ancient Medicine. 3.0 Credits.
A study of medicine in the ancient Near Eastern and Aegean worlds, including an examination of the practices of medicine in these ancient societies but with primary emphasis given to ideas about health and disease. Readings are selected from primary sources in the writings of ancient Egypt, Mesopotamia, Israel, Greece, and Rome. Topics treated include the sources of our knowledge; the nature of medical practitioners, medical treatment, and surgery; beliefs about disease and the etiology of illness; concepts of contagion and ritual purity. Special attention is given to Hippocratic medicine, the synthesis of Galen, and the rise of humoralism.
Instructor(s): P. McCarter
Area: Humanities

AS.130.313. History of Egypt from ca. 1200-30 BCE. 3.0 Credits.
In this class we will study selected historical topics from the end of the New Kingdom (ca. 1200 BCE) to the death of Cleopatra VII (30 BCE).
Instructor(s): R. Jasnow
Area: Humanities
Writing Intensive.

AS.130.323. Cleopatra's Egypt: Ptolemaic-Roman Egypt. 3.0 Credits.
This lecture course is a survey of the history, society, and culture of Graeco-Roman Egypt. We will concentrate on Ptolemaic Egypt (ca. 332-30 B.C.), but will also devote some time to Roman Egypt, especially to the subjects of the decline of paganism and spread of Christianity in Egypt.
Instructor(s): R. Jasnow
Area: Humanities.
AS.130.330. The Garden of Eden. 3.0 Credits.
References to the story of the Garden of Eden can be found in every significant issue of our time, from sex to politics, from race to the environment. The course will examine the story itself as well as how it's been interpreted, leading up to today. Enthusiastic participation required.
Instructor(s): E. Robbins
Area: Humanities.

AS.130.333. Ancient Egypt and Her Neighbors. 3.0 Credits.
An introduction to ancient Egypt's portrayals of and interactions with foreign lands and peoples, including Syria-Palestine to the east and Nubia to the south. Topics include trade, travel, warfare and diplomacy. Textual, iconographical and archaeological sources will be considered.
Instructor(s): A. Arico
Area: Humanities.

AS.130.334. Egyptian Funerary Arts in the Archaeological Museum. 3.0 Credits.
This class will cover the production and choice of funerary objects for Egyptian elite tombs in several eras of antiquity: the Middle and New Kingdoms, the Third Intermediate Period, and the Late Periods. Students will work with specific objects after learning generally about them, and they will carry out analyses of materials, pigments, construction methods, and erosion and degradation effects. They will create a virtual exhibition for the Museum's website and present their results for inclusion in the museum cataloguing project.
Instructor(s): B. Bryan; S. Balachandran
Area: Humanities.

AS.130.335. The Pharaohs: Power and Authority in Ancient Egypt. 3.0 Credits.
This course will introduce students to the triumphs and struggles of the men (and women) who ruled ancient Egypt, comparing Egyptian kingship to other ancient and modern systems of political power and authority.
Instructor(s): K. Bryson
Area: Humanities.

AS.130.341. Traditionalism vs. Orthodoxy in the Modern Era: The Case of Judaism. 3.0 Credits.
During the Modern Era in European history, the Traditionalist Jewish civilization of Europe that had evolved over many centuries was transformed by modernization. The new political, social, and intellectual realities which characterized Modernity seriously challenged, overwhelmed, and indeed threatened to destroy the Jewish Traditionalist culture and society. In response, different Traditionalist thinkers and communities evolved a number of strategies for surviving in the modern environment, strategies that unexpectedly transformed Traditionalism into something different, which came to be called Orthodox Judaism. This course explores this process of transformation, which has had an important impact on Jewish life in the modern and post-modern eras. Cross-listed with Jewish Studies.
Instructor(s): D. Katz
Area: Humanities.

AS.130.343. Dead Sea Scrolls-English. 3.0 Credits.
A survey of the manuscripts found at Qumran and other sites near the Dead Sea.
Instructor(s): D. Gropp
Area: Humanities.

AS.130.346. Introduction to the History of Rabbinic Literature. 3.0 Credits.
Broadly surveying classic rabbinic literature, including the Talmud and its commentaries, the legal codes and the response, this seminar explores the immanent as well as the external factors that shaped the development of this literature, the seminal role of this literature in Jewish self-definition and self-perception, and the role of this literature in pre-modern and modern Jewish culture.
Instructor(s): D. Katz
Area: Humanities.

AS.130.348. Religious Law Wrestles With Change: The Case of Judaism. 3.0 Credits.
Description: "How does a religious system which defines its ancient laws as God-given and unchangeable apply them to radically different and changing social, political and intellectual situations? This course explores the literature of "Questions and Answers" (She'elot u-Teshuvot), the Jewish legal responsa which have struggled to match Jewish religious law to modern life for fifteen centuries. A sweeping survey of Jewish history as revealed by one of its most impenetrable yet fascinating sources. Cross-listed with Jewish Studies.
Instructor(s): D. Katz
Area: Humanities.

AS.130.351. The Emergence of Civilization: A Cross-Cultural Examination. 3.0 Credits.
A comparative study of the origins of urban, literate civilizations in five culture areas: Mesopotamia, China, the Indus Valley, Egypt, and Mesoamerica. For each area, we will review the physical setting, the archaeological and textual evidence for the development of states and urban civilization, and theories advanced to explain the rise (and eventual collapse) of these complex societies.
Instructor(s): G. Schwartz
Area: Humanities, Social and Behavioral Sciences.

AS.130.353. Space Archaeology: An Introduction to Satellite Remote Sensing, GIS and GPS. 3.0 Credits.
This course introduces technologies archaeologists use to map ancient landscapes. These include Geographic Information Systems (GIS) mapping software, advanced Global Positioning System (GPS) receivers, and various types of satellite imagery. Taught together with AS.131.653.
Instructor(s): M. Harrower
Area: Natural Sciences, Social and Behavioral Sciences.

AS.130.354. Archaeological Method and Theory. 3.0 Credits.
Climate change, population growth, war - what questions do archaeologists ask about the ancient past, how do they collect relevant evidence, and how do they arrive at satisfying answers to their questions? This course will review major theoretical currents in archaeology including evolutionary, cultural-historical, processual and post-processual approaches and discuss the future of archaeology as a scientific and humanistic discipline. Basic techniques for analyzing major categories of artifacts such as lithics, ceramics, archaeobotanical, and zooarchaeological materials will also be introduced.
Instructor(s): M. Harrower
Area: Humanities, Social and Behavioral Sciences.
AS.130.357. Geographic Information Systems in Archaeology. 3.0 Credits.
Applications of GIS in archaeology have recently expanded dramatically and GIS has now become an indispensable tool for archaeological research worldwide. This course will introduce the major applications of Geographic Information Systems (GIS) in archaeology. These include the history of GIS in archaeology, air photography and satellite imagery, predictive modeling, hydrological modeling, viewsheds, and least-cost routes. It will grapple with theoretical issues manifest in archaeological GIS including conflicts between environment and social understandings of the ancient past, and will foster discussion of issues that affect outcomes of analyses including spatial scale and boundary delineation choices that can dramatically influence results. Students will learn the basics of ESRI’s ArcGIS software. Taught with AS.131.657.
Instructor(s): M. Harrower
Area: Humanities, Natural Sciences.

AS.130.359. Reading the Talmud in the Post-Talmudic Era. 3.0 Credits.
Life and Death, Survival and Martyrdom, in the Literature of Post-Talmudic Rabbinic Judaism. Readings in the Original Sources (Knowledge of Hebrew Required). Cross-listed with Jewish Studies.
Instructor(s): D. Katz
Area: Humanities.

AS.130.360. Nomads, Tyrants and Kings: Water in the Ancient Near East. 3.0 Credits.
This course explores economic and social histories of water in the ancient Near East. It examines water’s diverse roles in ancient Mesopotamian, Egyptian, Levantine and South Arabian agriculture, politics, ritual and religion, including water’s interconnected significance in Judaism, Christianity, and Islam. Taught jointly with AS.131.615.
Instructor(s): M. Harrower
Area: Humanities.

AS.130.361. Law in the Ancient Middle East. 3.0 Credits.
The Middle East offers the earliest and most abundant source material for reconstructing ancient legal systems. From stone monuments like the Code of Hammurabi to clay tablets the size of postage stamps, the cuneiform record provides a window into not just legal thought but actual legal practice in the ancient Middle East. Surveying a span of more than two thousand years, we will explore the law in both its deep structure and its regional and temporal diversity. Specific topics will include homicide and personal injury law, family law, the legal status of women, codes and codification, and ancient Israelite law in its Middle Eastern context. No background is required and all texts are read in translation, but every enrolled student is expected to actively participate in this seminar-style course.
Instructor(s): J. Lauinger
Area: Humanities.

AS.130.368. Nomads, Tyrants and Kings: Water in the Ancient Near East. 3.0 Credits.
This course explores economic and social histories of water in the ancient Near East. It examines water’s diverse roles in ancient Mesopotamian, Egyptian, Levantine and South Arabian agriculture, politics, ritual and religion, including water’s interconnected significance in Judaism, Christianity, and Islam. Taught jointly with AS.131.615.
Instructor(s): M. Harrower
Area: Humanities.

AS.130.369. Reading the Talmud in the Post-Talmudic Era. 3.0 Credits.
Life and Death, Survival and Martyrdom, in the Literature of Post-Talmudic Rabbinic Judaism. Readings in the Original Sources (Knowledge of Hebrew Required). Cross-listed with Jewish Studies.
Instructor(s): D. Katz
Area: Humanities.

AS.130.377. Creating an Egyptian Temple. 3.0 Credits.
This class will challenge every participant to plan a temple environment for a particular deity. The readings, lectures, and discussions will cover the mythology around specific gods and how it influenced temple architecture, location, ritual, and festivals. It will survey the history of temple building in Egypt, the role of architecture and art – particularly wall reliefs – in communicating the functions of particular parts of temples. The aim is to help students understand what requirements an Egyptian temple needed to fulfill. Then each student will plan a temple for a chosen deity and explain to peers how it meets the ancient requirements.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.378. Geoarchaeology: Applications of Earth Science to Archaeology. 3.0 Credits.
Geoarchaeology is a multidisciplinary subfield that applies the tools and techniques of earth science to understand ancient humans and their interactions with environments. This course examines basic topics and concepts, including archaeological site formation, paleo-environmental reconstruction, raw materials and resources, soil science, deposition and erosion of wind and water-borne sediments in different environments such as along rivers, lakes and coastlines, radiocarbon and other chronometric dating methods, and ground-based remote sensing, including ground penetrating radar.
Instructor(s): M. Harrower
Area: Natural Sciences, Social and Behavioral Sciences.

AS.130.379. The Development of Useful Things: Technology and Economy in the Ancient World. 3.0 Credits.
This course provides an overview of technological developments in the ancient world, by foregrounding the development of objects (stone tools, pottery, metals) and of non-material technologies (agriculture, animal domestication, writing).
Instructor(s): I. Dumitru
Area: Humanities.

AS.130.381. Elementary Akkadian. 3.0 Credits.
An introduction to the paleography, grammar and lexicon of the Akkadian language, and the reading of simpler texts in that language. Co-listed with AS.132.600
Instructor(s): M. Chapin
Area: Humanities.

AS.130.382. History of Mesopotamia II. 3.0 Credits.
A survey of the history of Sumer, Babylonia, and Assyria.
Instructor(s): J. Lauinger
Area: Humanities.

AS.130.383. Elementary Akkadian II. 3.0 Credits.
An introduction to the paleography, grammar, and lexicon of the Akkadian language, and the reading of simpler texts in that language. Continues AS.130.381
Instructor(s): J. Lauinger; P. Delnero
Area: Humanities.
AS.130.384. Old Kingdom Art. 3.0 Credits.
This course will explore the artistic expression of Egyptian culture from the 3rd through the 6th Dynasties, ca. 2700-2100 B.C. Tombs, temples, statuary, and two-dimensional wall decoration provide a large visual vocabulary of Egyptian concepts. This class will look at these elements, separately and in combination in order to consider the intentions behind the art and evaluate the degree to which religious and ideological symbolism, known from later Egyptian art, should be understood in the early pyramid-building era.
Instructor(s): B. Bryan
Area: Humanities.

AS.130.387. The Poetics of Biblical Prose and Verse. 3.0 Credits.
An exploration of how ancient Israelite techniques of literary textual and inter-textual patterning contributes to cohesion and meaning in biblical prose and verse. Attention will be given to the distinguishing characteristics of Hebrew verse in relation to prose, and to a range of different kinds of prose in Israelite literature. These poetics will be exemplified in close readings of selected texts from the Hebrew Bible in English.
Instructor(s): D. Gropp
Area: Humanities.

AS.130.388. Elementary Sumerian. 3.0 Credits.
An introduction to the paleography, grammar and lexicon of the Sumerian language, and the reading of simpler texts in that language.
Instructor(s): P. Delnero
Area: Humanities.

AS.130.395. Being_ in Ancient Egypt: Ethnicity, Sexuality, and Gender. 3.0 Credits.
What was it like to live in ancient Egypt? At first this question may seem deceivingly straightforward. But with further thought, its complexity becomes clear. Who are we concerned with? How the king lived? A poor farmer? His wife or children? A foreign immigrant? Moreover, what is our evidence for life in Egypt? Do all of the sources support similar interpretations? This course will begin to tackle these questions by considering the experiences of different people in ancient Egypt.
Instructor(s): T. Prakash
Area: Humanities.

AS.130.400. Introduction To Middle Egyptian. 3.0 Credits.
Introduction to the grammar and writing system of the classical language of the Egyptian Middle Kingdom (ca. 2055-1650 B.C.). In the second semester, literary texts and royal inscriptions will be read. Course meets with AS.133.601.
Instructor(s): R. Jasnow
Area: Humanities.

AS.130.401. Introduction To Middle Egyptian. 3.0 Credits.
Introduction to the grammar and writing system of the classical language of the Egyptian Middle Kingdom (ca. 2011-1700 B.C.). Co-listed with AS.133.601.
Prerequisites: Prereq: AS.130.400 or equivalent.
Instructor(s): L. Zhang
Area: Humanities.

AS.130.420. Seminar in Research Methods in Near Eastern Studies: (Auto)biography in the Ancient Near East. 3.0 Credits.
Just as in our time, the peoples of the ancient Near East were greatly interested in their own pasts. One of the most vibrant manifestations of this interest was the writing of biographies, in which ancient authors told the stories of individual lives. These biographies present an enormous challenge to contemporary historians. On the one hand, they offer a wealth of evidence – sometimes our only evidence – about some of the most famous persons of antiquity. On the other hand, the biographies were seldom written according to what we might consider “proper historical method.” How, as modern historians, do we approach these biographies in studying the ancient past? Using a variety of case studies, students will develop skills in specific research skills such as critical reading, analysis, and interpretation. AS.130.420 is required of NES Majors, but is also open to non-majors who have taken at least one 100-level and one 300-level Near Eastern Civilization course, or with the consent of the instructor.
Instructor(s): J. Lauinger
Area: Humanities Writing Intensive.

AS.130.440. Elementary Biblical Hebrew. 3.0 Credits.
Introduction to the grammar, vocabulary, and writing system of biblical Hebrew.
Instructor(s): J. Estrada
Area: Humanities.

AS.130.441. Elementary Biblical Hebrew. 3.0 Credits.
Survey of grammar and reading of simple texts. (Credit given only on completion of AS.130.440 and AS.130.441). May not be taken on a satisfactory/unsatisfactory basis.
Instructor(s): R. Liebermann
Area: Humanities.

AS.130.442. Readings - Hebrew Prose. 3.0 Credits.
Reading of biblical Hebrew prose, especially from the Pentateuch, Joshua, Judges, Samuel, and Kings. Cross-listed with Jewish Studies.
Instructor(s): R. Liebermann
Area: Humanities.

AS.130.443. Reading Of Hebrew Prose. 3.0 Credits.
Reading of Biblical Hebrew prose, especially from the Pentateuch, Joshua, Judges, Samuel, and Kings.
Instructor(s): K. Medill
Area: Humanities.

AS.130.444. Readings - Hebrew Narrative and Poetry. 3.0 Credits.
Intermediate readings in a variety of narratives with some exposure to poetic text.
Instructor(s): K. Medill
Area: Humanities.

AS.130.447. Readings - Hebrew Narrative and Poetry. 3.0 Credits.
Intermediate readings in a variety of narratives with some exposure to poetic text. A continuation of AS.130.446.
Instructor(s): K. Medill
Area: Humanities.

AS.130.501. Readings & Research. 3.0 Credits.
Instructor(s): M. Feldman; P. Delnero; R. Jasnow.

AS.130.504. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): P. Delnero; P. McCarter.

AS.130.505. Independent Study-Archaeology Fieldwork. 1.0 Credit.
Instructor(s): E. Anderson; G. Schwartz; L. Deleonardis; M. Harrower.
AS.130.506. Independent Study-Archaeology Fieldwork. 1.0 - 3.0 Credits.
Instructor(s): B. Bryan; E. Anderson; G. Schwartz; M. Feldman; M. Harrower.

AS.130.510. Archaeology Major Honors Thesis I. 3.0 Credits.
Instructor(s): E. Anderson; G. Schwartz; L. Deleonardis; M. Harrower; M. Roller
Writing Intensive.

AS.130.511. Archaeology Major Honors Thesis II. 3.0 Credits.
Prerequisites: AS.130.510
Instructor(s): E. Anderson; G. Schwartz; L. Deleonardis; M. Roller
Writing Intensive.

AS.130.590. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): D. Viete; K. Livi; M. Harrower.

AS.131.600. Seminar Near Eastern History: Egypt.
Seminar in Near Eastern History: Egypt
Instructor(s): B. Bryan.

A three-year history cycle required of all graduate students and forming the core of our graduate program. One year each will be devoted to Egyptian history, Mesopotamian history, and Syro-Palestinian history.
Instructor(s): R. Jasnow.

AS.131.613. Archaeology of Africa: From Human Origins to the Emergence of Civilizations.
This course examines Africa’s ancient past from the emergence of biologically modern humans, ancient hunter-gatherers, the earliest animal herding and farming populations, to cities and civilizations. While Egypt plays an undeniably central role in world history, this course concentrates in particular on ancient geographies other than Egypt.
Instructor(s): M. Harrower
Area: Humanities.

This course explores economic and social histories of water in the ancient Near East. It examines water’s diverse roles in ancient Mesopotamian, Egyptian, Levantine and South Arabian agriculture, politics, ritual and religion, including water’s interconnected significance in Judaism, Christianity, and Islam. Taught jointly with AS.130.368
Instructor(s): M. Harrower
Area: Humanities.

Topic varies but can include the archaeology of Mesopotamia, Syria, or Palestine, or thematic discussions (e.g., on ideology, state collapse, etc.).
Instructor(s): G. Schwartz.

AS.131.635. Seminar Near East Archaeology.
Topic varies but can include the archaeology of Mesopotamia, Syria, or Palestine, or thematic discussions (e.g., on ideology, state collapse, etc.).
Instructor(s): G. Schwartz
Area: Humanities.

AS.131.653. Space Archaeology: An Introduction to Satellite Remote Sensing, GIS and GPS.
This course introduces technologies archaeologists use to map ancient landscapes. These include Geographic Information Systems (GIS) mapping software, advanced Global Positioning System (GPS) receivers, and various types of satellite imagery. Taught together with AS.130.353.
Instructor(s): M. Harrower
Area: Natural Sciences, Social and Behavioral Sciences.

Climate change, population growth, war - what questions do archaeologists ask about the ancient past, how do they collect relevant evidence, and how do they arrive at satisfying answers to their questions? This course will review major theoretical currents in archaeology including evolutionary, cultural-historical, processual and post-processual approaches and discuss the future of archaeology as a scientific and humanistic discipline. Basic techniques for analyzing major categories of artifacts such as lithics, ceramics, archaeobotanical, and zooarchaeological materials will also be introduced.
Instructor(s): M. Harrower
Area: Humanities, Social and Behavioral Sciences.

Applications of GIS in archaeology have recently expanded dramatically and GIS has now become an indispensable tool for archaeological research worldwide. This course will introduce the major applications of Geographic Information Systems (GIS) in archaeology. These include the history of GIS in archaeology, air photography and satellite imagery, predictive modeling, hydrological modeling, viewsheds, and least-cost routes. It will grapple with theoretical issues manifest in archaeological GIS including conflicts between environment and social understandings of the ancient past, and will foster discussion of issues that affect outcomes of analyses including spatial scale and boundary delineation choices that can dramatically influence results. Students will learn the basics of ESRI's ArcGIS software. Taught with AS.130.357.
Instructor(s): M. Harrower
Area: Humanities, Natural Sciences.

AS.131.678. Geoarchaeology: Applications of Earth Science to Archaeology.
Geoarchaeology is a multidisciplinary subfield that applies the tools and techniques of earth science to understand ancient humans and their interactions with environments. This course examines basic topics and concepts, including archaeological site formation, paleo-environmental reconstruction, raw materials and resources, soil science, deposition and erosion of wind and water-borne sediments in different environments such as along rivers, lakes and coastlines, radiocarbon and other chronometric dating methods, and ground-based remote sensing, including ground penetrating radar.
Instructor(s): M. Harrower
Area: Natural Sciences, Social and Behavioral Sciences.

AS.131.800. Readings & Research.
Instructor(s): Staff.

AS.131.801. Readings And Research.
Instructor(s): Staff
Area: Humanities.

AS.131.848. Dissertation Research.
Instructor(s): Staff.

Instructor(s): Staff.

AS.132.600. Elementary Akkadian.
An introduction to the paleography, grammar and lexicon of the Akkadian language, and the reading of simpler texts in that language. Co-listed with AS.130.381
Instructor(s): M. Chapin.
AS.132.601. Elementary Akkadian II.
An introduction to the paleography, grammar and lexicon of the Akkadian language, and the reading of simpler texts in that language. Undergraduates admitted to this course earn 4.5 credits per semester. Instructor(s): R. Essam
Area: Humanities.

In this course a selection of intermediate level Akkadian texts from different genres and period will be read, analyzed and discussed. To build on skills learned in Introduction to Akkadian, specific emphasis will be placed on understanding more advanced grammatical forms and learning how to critically use research tools like the Chicago Assyrian Dictionary and von Soden’s Akkadisches Handwörterbuch. Instructor(s): J. Lauinger.

In this course a selection of intermediate level Akkadian texts from different genres and period will be read, analyzed and discussed. To build on skills learned in Introduction to Akkadian, specific emphasis will be placed on understanding more advanced grammatical forms and learning how to critically use research tools like the Chicago Assyrian Dictionary and von Soden’s Akkadisches Handwörterbuch. Instructor(s): J. Lauinger
Area: Humanities.

This course introduces students to letters written in the Akkadian language from a variety of historical periods. Recommended course background: AS.132.600 and AS.132.601. Instructor(s): K. Medill
Area: Humanities.

This writing intensive seminar examines how textual and artistic production were used separately and together to engender and communicate social, cultural, and political meaning in ancient Mesopotamia and the rest of the Near East from the 4th millennium to the Hellenistic period. Using a variety of case studies, students will develop skills in specific research skills such as critical reading, analysis, and interpretation. AS.130.420 is required of NES Majors, but is also open to non-majors who have taken at least one 100-level and one 300-level Near Eastern Civilization course, or with the consent of the instructor. Cross-listed with History of Art.
Instructor(s): M. Feldman; P. Delnero
Area: Humanities
Writing Intensive.

Students will read a variety of Akkadian texts commonly described as literary in the original cuneiform.
Instructor(s): J. Lauinger.

AS.132.640. Historical Texts.
This course has two primary objectives: To introduce students to texts commonly described as “historical” (e.g., royal inscriptions, chronicles); and to further expose students to the Old Babylonian dialect of the Akkadian language. A secondary objective is to begin to develop familiarity with critical research tools such as the Chicago Assyrian Dictionary and the Akkadisches Handwörterbuch.
Instructor(s): J. Lauinger.

Students read the diplomatic correspondence from Tell el-Amarna in the original cuneiform. Focus is on language and history: the dialect(s) of Akkadian in which the letters are written and the diplomatic history of the Late Bronze Age.
Prerequisites: Prereqs: AS.132.600 or instructor’s consent.
Instructor(s): J. Lauinger
Area: Humanities.

AS.132.644. Treaties And Diplomacy.
Reading treaties and related materials in Akkadian.
Instructor(s): J. Lauinger.

AS.132.650. Peripheral Akkadian.
Includes texts from Amarna, Emar, Ugarit, Boghazkoi, Nuzi, Alalakh, and Elam.
Instructor(s): J. Lauinger.

AS.132.700. Elementary Sumerian.
An introduction to the paleography, grammar and lexicon of the Sumerian language, and the reading of simpler texts in that language. Instructor(s): P. Delnero
Area: Humanities.

AS.132.701. Elementary Sumerian.
Instructor(s): P. Delnero
Area: Humanities.

AS.132.710. Advanced Sumerian.
We will read Letter Collection B and related materials in the original cuneiform.
Instructor(s): A. Glenn.

AS.132.711. Advanced Sumerian.
In this course a selection of Sumerian texts from different periods and genres will be read and discussed from a linguistic, philological, historical, and literary perspective.
Instructor(s): P. Delnero.

AS.132.800. Mesopotamian Seminar.
Research and discussion on topics of current interest.
Instructor(s): G. Schwartz; J. Lauinger; M. Feldman.

AS.132.801. Mesopotamian Seminar.
Research and discussion on topics of current interest.
Instructor(s): G. Schwartz; J. Lauinger; M. Feldman; P. Delnero
Area: Humanities.

AS.133.450. Seminar in Egyptian Art and Archaeology: Approaching Egyptian Art. 3.0 Credits.
A seminar-based course requiring that students have had at least one prior course in Egyptian art or archaeology. The course will consider the wide variety of ways that people analyze Egyptian art – currently and over the last hundred twenty-five years. Art historical, anthropological, semiological, and various other approaches will be evaluated during the term. We will focus on reading authors discussing examples chosen from three millennia of art production. Recommended Course Background: At least one prior course in Egyptian art or archaeology.
Instructor(s): B. Bryan
Area: Humanities.

AS.133.600. Introduction To Middle Egyptian.
Introduction to the grammar and writing system of the classical language of the Egyptian Middle Kingdom (ca. 2135-2000 B.C.). In the second semester, literary texts and royal inscriptions will be read.
Instructor(s): R. Jasnow.
AS.133.601. Introduction To Middle Egyptian (Hieroglyphs).
Introduction to the grammar and writing system of the classical language of the Egyptian Middle Kingdom (ca. 2011-1700 B.C.). Co-listed with AS.130.401
Prerequisites: Prereq: AS.133.600 or equivalent.
Instructor(s): L. Zhang
Area: Humanities.

AS.133.610. Middle Egyptian Texts.
In this course we read a variety of Middle Egyptian hieroglyphic compositions and documents. Knowledge of Middle Egyptian Required.
Instructor(s): B. Bryan; R. Jasnow.

AS.133.611. Middle Egyptian Texts.
In this course we read a variety of Middle Egyptian hieroglyphic compositions and documents. Knowledge of Middle Egyptian Required.
Instructor(s): B. Bryan; R. Jasnow
Area: Humanities.

AS.133.615. Representation and Identity in Ancient Egypt.
Using artistic, archaeological, and textual data, this course will apply recent anthropological and archaeological theories for understanding identity to ancient Egypt. In order to successfully approach such a broad concept, which could easily encompass many other topics, we will focus specifically on three different types of identity: ethnic (and cultural), gender, and sexual. Throughout the semester, we will explore how scholars identify past identities and the issues associated with this process. We will also consider the ways in which these identities were fluid, socially or culturally restricted, and self-defined.
Instructor(s): T. Prakash
Area: Humanities.

AS.133.620. Hieratic.
Instructor(s): R. Jasnow.

AS.133.621. Hieratic.
Instructor(s): R. Jasnow
Area: Humanities.

AS.133.630. Old Egyptian.
Instructor(s): B. Bryan.

AS.133.640. Late Egyptian.
Instructor(s): R. Jasnow.

AS.133.641. Late Egyptian Texts.
An introduction to the grammar and texts of Late Egyptian.
Instructor(s): R. Jasnow
Area: Humanities.

AS.133.646. Demotic Texts.
Instructor(s): R. Jasnow.

AS.133.647. Demotic Texts.
Instructor(s): R. Jasnow
Area: Humanities.

AS.133.648. Intro To Coptic.
Instructor(s): R. Jasnow.

AS.133.657. Creating an Egyptian Temple.
This class will challenge every participant to plan a temple environment for a particular deity. The readings, lectures, and discussions will cover the mythology around specific gods and how it influenced temple architecture, location, ritual, and festivals. It will survey the history of temple building in Egypt, the role of architecture and art—particularly wall reliefs—in communicating the functions of particular parts of temples. The aim is to help students understand what requirements an Egyptian temple needed to fulfill. Then each student will plan a temple for a chosen deity and explain to peers how it meets the ancient requirements.
Instructor(s): B. Bryan
Area: Humanities.

AS.133.706. Egyptian Funerary Arts in the Archaeological Museum.
This class will aim to cover the production and choice of funerary objects for Egyptian elite tombs in several eras of antiquity: the Middle and New Kingdoms, the Third Intermediate Period, and the Late Periods. Students will work with specific objects after learning generally about them, and they will carry out analyses of materials, pigments, construction methods, and erosion and degradation effects. They will create a virtual exhibition for the Museum’s website and present their results for inclusion in the museum cataloguing project.
Instructor(s): B. Bryan; S. Balachandran.

AS.133.750. Seminar in Egyptian Art and Archaeology.
The theme for this course will be archaeology of the Mut precinct in Luxor where Johns Hopkins is excavating. Study of the comparative materials from other sites will be central with the publication of the work approaching.
Instructor(s): B. Bryan.

AS.133.751. Seminar in Egyptian Art and Archaeology: Old Kingdom Art.
This class will explore the artistic expression of Egyptian culture from the 3rd through the 6th Dynasties, ca. 2700-2100 B.C. Tombs, temples, statuary, and two-dimensional wall decoration provide a large visual vocabulary of Egyptian concepts. This class will look at these elements, separately and in combination in order to consider the intentions behind the art and evaluate the degree to which religious and ideological symbolism, known from later Egyptian art, should be understood in the early pyramid-building era.
Instructor(s): B. Bryan.

AS.134.604. The Book Of Job.
Reading the Hebrew text of the book of Job with attention to philology, textual criticism, and various aspects of interpretation.
Instructor(s): T. Lewis
Area: Humanities.

Translation, textual, philological, prosodic, literary and thematic analysis of Isaiah 40-55, with focus on how Hebrew verse as distinct from prose is constructed.
Instructor(s): D. Gropp
Area: Humanities.

A rapid reading course aimed at increasing proficiency in reading the Hebrew text of the book of Ezekiel. Various aspects of translation and interpretation will be studied (e.g., grammar, textual criticism, Philology) including literary, historical, and theological questions. Cross-listed with Jewish Studies.
Instructor(s): T. Lewis.

AS.134.610. Historical Hebrew Grammar.
Phonology and morphology of Biblical Hebrew.
Instructor(s): P. McCarter.
AS.134.612. Qumran Aramaic.
Readings in the Aramaic texts from Qumran, such as the Prayer of
Nabonidus, the Genesis Apocryphon, Targum of Job, and the Enochic
literature. Basic ability to read Aramaic is necessary.
Instructor(s): D. Grop
Area: Humanities.
AS.134.621. Textual Criticism.
An introduction to the ancient witnesses of the biblical text and the
principles of textual criticism.
Instructor(s): P. McCarter.
AS.134.630. Qumran (Dead Sea) Texts.
Instructor(s): P. McCarter.
Translation and analysis of selected texts in Biblical Hebrew giving
attention to advanced features of grammar and syntax. Topic: “The Book
of Judges”
Instructor(s): P. McCarter.
AS.134.652. Seminar in Ancient Israelite Religion.
Topics include history of scholarship, methodology, representations of
deity, the aniconic tradition, solar Yahwism, sacred space, blood rituals,
passover, royal cult, family religion, divination, prophecy, incantations, etc.
Instructor(s): T. Lewis
AS.134.655. Comparative Semitics.
Comparative and historical analysis of the Semitic languages in their
Afro-Asiatic context.
Instructor(s): P. McCarter.
AS.134.660. History of Ancient Syria/Palestine.
A survey of the history of Ancient Syria and Canaan, including Ancient
Israel.
Instructor(s): J. Lauinger.
AS.134.661. History: Ancient Syria-Palestine II.
A survey of the history of Ancient Syria and Canaan, including Ancient
Israel.
Instructor(s): P. McCarter
Area: Humanities.
Instructor(s): P. McCarter.
Instructor(s): P. McCarter
Area: Humanities.
AS.134.720. Ugaritic I.
A year-long course studying Ugaritic language and literature. The
first semester will focus on grammar and translating a representative
selection of mythological texts. The second semester will concentrate
on ritual texts. The course will also be epigraphic in nature using both
conventional and digital techniques.
Instructor(s): T. Lewis.
AS.134.721. Ugaritic II.
A continuation of AS.134.720 with emphasis on the mythological and
ritual texts from Ugarit. A digital epigraphy lab will also form part of
the course.
Instructor(s): W. Reed
Area: Humanities.
AS.134.744. Survey Of Aramaic Texts.
Instructor(s): T. Lewis
Area: Humanities.
An advanced course in Aramaic devoted to the study of Old Aramaic
inscriptions. We will be translating and analyzing a selection of texts from
Northern Syria (e.g. Bar-Rakib; Hadad; Kutalmuwa, Nerab, Panamuwa,
Sefire, Zakku), Southern Syria (e.g. Bar-Hadad/Melqart Stela, Hazaal, Tel
Dan) and Northern Mesopotamia (e.g. Tell Fakhariyah). Students will be
expected to vocalize such texts as a study in historical and comparative
linguistics and to clarify their understanding of the morphology and
syntax.
Instructor(s): T. Lewis
Area: Humanities.

Cross Listed Courses

History of Art
AS.010.105. Art of the Ancient Americas. 3.0 Credits.
This course provides a basis for the study of ancient Americas art and
architecture and a broad exposure to the issues relevant to its study.
Select visual arts within the primary regions of Mexico and Central
America will be emphasized. In conjunction with the Baltimore Museum
of Art (BMA) and the JHU Archaeological Museum (JHAM), students will
participate in on-site study of the collections.
Instructor(s): L. Deleonardis
Area: Humanities.
AS.010.236. Palaces, Temples and Tombs in Mesopotamia. 3.0 Credits.
Mesopotamia, the “land between the rivers,” is considered the cradle of
civilization. Its earliest urban centers appeared by 3500 BCE in the
region of modern-day Iraq, Iran, and Syria. Along with urbanism came the
emergence of temples and palaces as large-scale elite institutions (along
with written records). Their arts manifest some of the earliest complex
representations and follow a vibrant course for several millennia. The
first empires marshaled large armies and amassed fabulous riches.
Complex religious and ritual ideologies were expressed in the art and
architecture. And all has been revealed by the archaeologist’s spade. This
class explores the art and architecture of Mesopotamia (ancient Sumer,
Babylonia and Assyria) from 3500 to 330 BCE. Emphasis is placed on
the relationship between the arts and ancient society in order to enable
students to acquire the skills for accessing and appreciating ancient
civilizations.
Instructor(s): M. Feldman
Area: Humanities.
AS.010.301. Art of the Ancient Americas. 3.0 Credits.
This course provides a basis for the study of ancient Americas art and
architecture and a broad exposure to the issues relevant to its study.
Select visual arts within the primary regions of Mexico and Central
America will be emphasized. In conjunction with the Baltimore Museum
of Art (BMA) and the JHU Archaeological Museum (JHAM), students will
participate in on-site study of the collections.
Instructor(s): L. Deleonardis
Area: Humanities.
AS.010.307. Diplomats, Dealers, and Diggers: The Birth of Archaeology
and the Rise of Collecting from the 19th c. to Today. 3.0 Credits.
The development of archaeology in the Middle East – its history of
explorers, diplomats, missionaries and gentlemen-scholars – profoundly
shaped the modern world, from the creation of new museums and the
antiquities market to international relations and terrorism.
Instructor(s): M. Feldman
Area: Humanities.
AS.010.315. Art of the Assyrian Empire, 1000-600 BCE. 3.0 Credits.
The Assyrian Empire dominated the ancient world from 1000-612 BCE, stretching from Iran to Egypt and laying the foundation for the later Persian and Macedonian empires. With imperial expansion came an explosion of artistic production ranging from palace wall reliefs to small-scale luxury objects. This course provides an integrated picture of the imperial arts of this first great empire, situating it within the broader social and political contexts of the first millennium BCE.
Instructor(s): M. Feldman
Area: Humanities.

AS.010.389. The Stone and the Thread. 3.0 Credits.
Inka architecture in its social, historical and cultural contexts forms the basis of this course. Shared forms and ideas implicit in the fiber arts offer comparative points for analysis and discussion.
Instructor(s): L. Deleonardis
Area: Humanities
Writing Intensive.

AS.010.398. Tombs for the Living. 3.0 Credits.
Centering on the tomb as the unit of analysis, this course examines the cultural and material aspects of death and funerary ritual. Draws on case studies from North America, Mesoamerica, and the Andes. Collections study in museums.
Instructor(s): L. Deleonardis
Area: Humanities.

AS.010.421. Creating Sacred Space in the Ancient and Medieval World. 3.0 Credits.
What makes a space sacred? How is it different from other spaces? This seminar explores the various means - visual, artifactual, architectural, and performative - of creating sacred space in the ancient and medieval worlds of the Near East and Mediterranean. Possible cases for study include early Sumerian temples, state-sponsored Assyrian temples, votive deposits, Greek sanctuaries, sanctuaries and landscape, early medieval Jewish, Christian, and Islamic cult buildings, cave sanctuaries, pilgrimage sites, icons and sacred space.
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

AS.010.470. Power and Politics in Assyrian Art. 3.0 Credits.
Assyria, centered in northern Iraq, created one of the world's first great empires that dominated the ancient Near Eastern world from around 900 to 612 BCE. In concert with imperial expansion came an explosion of artistic production ranging from palace wall reliefs to small-scale luxury objects. This seminar examines the close relationship between the arts and politics in the Assyrian Empire. Some themes that will be explored are: historical narrative, text and image, portable luxury arts and gender, politics and religion. The course will engage in close visual analysis of the ancient materials and readings of critical scholarship.
Instructor(s): M. Feldman
Area: Humanities
Writing Intensive.

Seals, artifacts associated with property, oversight, and control, were used in the ancient Near East as early as the 7th millennium BCE. These took the form of a single carved surface that could be impressed in a malleable substance such as clay to leave behind a physical mark. With the growth of large-scale urbanism and, most critical, the invention of cuneiform writing, a spool-shaped seal carved around its circumference appeared. This quintessentially Mesopotamian artifact - the cylinder seal - persisted until cuneiform writing died out around the beginning of the Common Era. The over-three-thousand-year span of the cylinder seal provides remarkably rich evidence for the ancient civilizations of the Near East.
Instructor(s): M. Feldman.

The arts of the Near East, Aegean and Egypt are typically taught separately from one another. However, the Mediterranean Sea has always served as a connector, and the diverse cultures of these areas were in close contact with one another for much of their histories. During the Bronze Age (3000 to 1200 BCE), these interactions were particularly dynamic, resulting in a diversity of arts including wall frescoes, precious jewelry, and elaborate furnishings and weaponry. This course examines the arts of the interactions among Near Easterners, Greeks, Egyptians and others. It focuses special attention on the role of artistic products in intercultural relations, including trade, diplomacy, war and imperialism. Students are not expected to have extensive knowledge of all the areas, although some experience in at least one of them will be helpful. The course will interweave establishing a knowledge base necessary to tackle this topic with broader conceptual concerns and interdisciplinary approaches (art historical, archaeological, anthropological, and historical). There will be a final paper.
Instructor(s): E. Anderson; M. Feldman
Area: Humanities.

Assyria, centered in northern Iraq, created one of the world’s first great empires that dominated the ancient Near Eastern world from around 900 to 612 BCE. In concert with imperial expansion came an explosion of architectural and artistic production including entire cities and their ornamentation. This seminar examines the close relationship between the arts and politics in the Assyrian empire. The course will engage in close visual analysis of the ancient materials and critical readings of scholarship. There will be a final project.
Instructor(s): M. Feldman
Area: Humanities.

Classics
AS.040.137. Freshman Seminar: Archaeology at the Crossroads: The Ancient Eastern Mediterranean through Objects in the JHU Archaeological Museum. 3.0 Credits.
This seminar investigates the Eastern Mediterranean as a space of intense cultural interaction in the Late Bronze Age, exploring how people, ideas, and things not only came into contact but deeply influenced one another through maritime trade, art, politics, etc. In addition to class discussion, we will work hands-on with artifacts from the JHU Archaeological Museum, focusing on material from Cyprus.
Instructor(s): E. Anderson
Area: Humanities
Writing Intensive.
AS.040.363. Craft and Craftpersons of the Ancient World: Status, Creativity and Tradition. 3.0 Credits.
This course explores the dynamic work and social roles of craftpersons in early Greece, the eastern Mediterranean and Near East. Readings and discussion will query the identities and contributions of these people—travelers, captives, lauded masters, and even children—through topics including gender, class, and ethnicity. Special focus on late third-first millennia BCE; local field trips.
Instructor(s): E. Anderson
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.040.366. The Archaeology of Ancient Cyprus: Investigating a Mediterranean Island World in the JHU Museum. 3.0 Credits.
This course explores the visual and material worlds of ancient Cyprus from the earliest human evidence through the Iron Age. Course topics will include the island's unique position between the Aegean and Near East and how this has impacted both Cyprus' ancient past and the way in which it has been conceived in the modern world. Class involves regular analysis of artifacts based in the Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities.

History
AS.100.234. The Making of the Muslim Middle East, 600-1100 A.D. 3.0 Credits.
A survey of the major historical transformations of the region we now call the 'Middle East' (from late antiquity through the 11th century) in relation to the formation and development of Islam and various Muslim empires. Cross-listed with Near Eastern Studies and the Program in Islamic Studies.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.362. Children and Childhood in the Middle Ages. 3.0 Credits.
Seminar on the history of childhood and ideas of childhood around the medieval Mediterranean; themes include child custody; medieval education and punishment; parent-child private letters; child mortality and the arts of bereavement/consolation. Cross-listed with the Program in Islamic Studies and Near Eastern Studies.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.374. Conquest, Conversion, and Language Change in the Middle Ages. 3.0 Credits.
Examines cases of imperial conquest and attendant religious transformation (Christianization; Islamization) and language change in the medieval Mediterranean (Europe and Middle East), e.g. transition from Latin to vernacular languages in Europe; Arabization; translation movements.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.383. Conversion and Apostasy in the Middle Ages. 3.0 Credits.
Compares religious transformation in medieval Europe and the Middle East (ca. 600-1500), including conquest and conversion; conversion narratives; apostasy, martyrdom and other encounters between medieval Jews, Christians, and Muslims.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.615. States, Scribes, and Archives: Medieval Arabic Documentary Cultures.
A historical survey of the bureaucratic practices of medieval Islamic states (in comparative perspective); includes cios readings of primary official documents, e.g. petitions, edicts, fiscal receipts, and administrative reports.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

AS.100.646. Marvels and Wonder in medieval Arabic Culture.
Explores the concept of marvels in different genres of medieval Arabic culture: Qur'anic exegesis; travel literature; 'ethnography'; cosmography and geography; marvels of the natural world (e.g. hermaphrodites); Muslim views of pre-Islamic ('pagan') monuments.
Instructor(s): T. El-leithy
Area: Humanities, Social and Behavioral Sciences.

Archaeology
AS.136.101. Introduction To Archaeology. 3.0 Credits.
An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.
Instructor(s): G. Schwartz
Area: Humanities, Social and Behavioral Sciences.

Earth Planetary Sciences
AS.270.205. Introduction to Geographic Information Systems and Geospatial Analysis. 3.0 Credits.
The course provides a broad introduction to the principles and practice of Geographic Information Systems (GIS) and related tools of Geospatial Analysis. Topics will include history of GIS, GIS data structures, data acquisition and merging, database management, spatial analysis, and GIS applications. In addition, students will get hands-on experience working with GIS software.
Instructor(s): X. Chen
Area: Engineering, Natural Sciences.

Program in Museums and Society
AS.389.205. Examining Archaeological Objects. 3.0 Credits.
This course considers the role of materials in the production, study and interpretation of objects by examining artifacts from the Johns Hopkins Archaeological Museum. Students will consider materials such as ceramics, stone, metal, glass, wood and textiles, and visit artists' studios to gain an understanding of historical manufacturing processes. M&S practicum course. Cross-listed with Archaeology, Near Eastern Studies, Classics, and History of Art.
Instructor(s): S. Balachandran
Area: Humanities.

AS.389.315. Ancient Color: The Technologies and Meanings of Color in Antiquity. 3.0 Credits.
What role did the colorful surfaces of sculptures, vessels and textiles play in the ancient world? We examine historical texts and recent scholarly and scientific publications on the technologies and meanings of color in antiquity, and use imaging and analytical techniques to study polychromed objects from the Johns Hopkins Archaeological Museum.
Instructor(s): S. Balachandran
Area: Humanities, Social and Behavioral Sciences.

Neuroscience
http://krieger.jhu.edu/neuroscience
Neuroscience is the study of the nervous system and how it functions. Neuroscientists study the nervous system from all levels, ranging from molecules interacting with cell membranes to brain systems subserving cognitive functions such as language. Dramatic progress has been made at all levels, and the field continues to grow. On the Homewood campus, researchers studying the nervous system are in the departments of Biology, Biomedical Engineering, Biophysics, Cognitive Science, and Psychological and Brain Sciences and in the Krieger Mind/Brain Institute. Their presence provides the opportunity for an innovative, interdepartmental program which offers a broad overview of the neuroscience field, as well as more advanced training in one of four focus areas.

*Cellular and Molecular Neuroscience* (CM) focuses on the mechanisms by which information flows within and between cells in the nervous system, and the mechanisms through which the cellular structure of the nervous system develops and is maintained. Topics include the molecular basis of membrane permeability, action potentials, sensory transduction, synaptic transmission, neuronal modulation, mechanisms of drug action, and the molecular basis of genetic disorders of the nervous system.

*Cognitive Neuroscience* (CG) focuses on how cognitive functions, such as vision or language, are implemented by the brain. Drawing upon a variety of techniques for probing the working brain at cognitive and neural levels, including functional neuroimaging, analysis of cognitive impairments in brain-damaged patients, and electrophysiological techniques, research in cognitive neuroscience seeks to relate mental representations and computations to brain mechanisms and processes.

*Computational Neuroscience* (CP) focuses on applying mathematical tools and theories to investigate brain function. This discipline incorporates a diverse set of approaches from mathematics, physics, engineering, and computer science, to understand how the nervous system processes information. Such principles are used to answer questions across a variety of domains of neuroscience: cellular/molecular, systems and circuits, behavioral and cognitive.

*Systems Neuroscience* (ST) seeks to relate brain structure and functioning to behaviors and related physiological processes. Research in this area explores the description and analysis of neural circuits. This includes identifying the brain nuclei and interconnections making up a circuit, identifying and investigating the implicated neurotransmitters, and characterizing the intrinsic and extrinsic factors that modulate the development and adult functioning of the circuit. Topics as diverse as learning and memory, communication, sensory systems, and motivated behaviors (e.g., reproduction, feeding, and aggression) are explored from this perspective.

**Neuroscience Program Committee**
The Neuroscience Program Committee coordinates course offerings, oversees the program's interdepartmental courses, reviews and updates the administration of the program, makes decisions about admission to the B.S./M.S. program, approves proposed research programs and mentors for students in the B.S./M.S. mentored research program, and evaluates the final reports and presentations from the research year.

**Undergraduate Programs**
The neuroscience major consists of two degree programs: a four-year B.S. based primarily on course work and 6 credits of research; and a five-year concurrent B.S./M.S. involving additional course work and a yearlong intensive laboratory experience. (Under special circumstances, a student may be able to complete the B.S./M.S. program in less than five years.) Both programs are designed to provide rigorous preparation for advanced study in either a Ph.D., M.D. or Ph.D./M.D. programs. The concurrent B.S./M.S. program accepts students every spring semester.

Additional information regarding the undergraduate degree and the B.S./M.S. programs is available through our website at http://krieger.jhu.edu/neuroscience. You may also contact our Academic Program Administrator, Linda White, mailto:linda.m.white@jhu.edu (linda.m.white@jhu.edu) or 410-516-6196.

**Requirements for the B.S. Degree**
Also see Requirements for a Bachelor's Degree (p. 7).

**General Information**
- Students are encouraged to complete an optional introductory course in their freshman year, such as AS.200.141 Foundations of Brain, Behavior and Cognition or AS.050.105 Introduction to Cognitive Neuropsychology.
- Students interested in attending medical school will need to take a second semester of organic chemistry and its corresponding laboratory to meet medical school admission requirements; however, these courses are not major requirements.
- Students are required to select their advanced neuroscience elective courses from one of four approved focus areas: cellular and molecular neuroscience, cognitive neuroscience, computational neuroscience, or systems neuroscience. Approved courses fulfilling this requirement are found on the neuroscience website (http://krieger.jhu.edu/neuroscience/bs-program/courses) or in the schedule of classes.
- To apply towards the major, all courses must be taken for a letter grade and a grade of C- or better is required.

**Neuroscience Sequence**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.080.203</td>
<td>Neuroscience: Cognitive (spring)</td>
<td>3</td>
</tr>
<tr>
<td>AS.080.250</td>
<td>Neuroscience Laboratory (fall/spring)</td>
<td>3</td>
</tr>
<tr>
<td>AS.080.305</td>
<td>Neuroscience: Cellular and Systems I (fall)</td>
<td>3</td>
</tr>
<tr>
<td>AS.080.306</td>
<td>Neuroscience: Cellular and Systems II (spring)</td>
<td>3</td>
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**Mathematics, Statistics, and Science Courses**

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<th>Course Title</th>
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<tbody>
<tr>
<td>EN.553.211</td>
<td>Probability and Statistics for the Life Sciences</td>
<td>4</td>
</tr>
<tr>
<td>or EN.553.310</td>
<td>Probability &amp; Statistics</td>
<td>4</td>
</tr>
<tr>
<td>or EN.553.311</td>
<td>Probability and Statistics for the Biological Sciences and Engineering</td>
<td>4</td>
</tr>
<tr>
<td>or EN.553.111</td>
<td>Statistical Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; EN.553.112</td>
<td>Statistical Analysis II</td>
<td>3</td>
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<tr>
<td>AS.110.106</td>
<td>Calculus I (Biological and Social Sciences)</td>
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</tr>
<tr>
<td>or AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.107</td>
<td>Calculus II (For Biological and Social Science)</td>
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</tr>
<tr>
<td>or AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
<td>4</td>
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<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>4</td>
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<tr>
<td>&amp; AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
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</tr>
<tr>
<td>&amp; AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.030.103</td>
<td>Applied Chemical Equilibrium and Reactivity w/lab</td>
<td>4</td>
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<tr>
<td>AS.030.205</td>
<td>Introductory Organic Chemistry I</td>
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</tr>
<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.103</td>
<td>General Physics I for Biological Science Majors</td>
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<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
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</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
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</tr>
</tbody>
</table>
Sample Program

The following course sequence is only a suggestion and is based on the assumption that there are no AP/IB/TR credits applied. Please consult with your faculty advisor when selecting and registering for classes, as there are multiple ways to complete the major.

Advanced Neuroscience Elective Courses and Focus Area

Nine credits of 300-level or higher approved courses from one of four focus areas: systems neuroscience, cognitive neuroscience, computational neuroscience, or cellular and molecular neuroscience.

Three credits of 300-level or higher approved course outside of focus area selected above.

If pursuing the Computational Neuroscience focus area, EN.553.291 is required in addition to the other 12 credits required of the focus area (or the combo of AS.110.201/212 and AS.110.302 may be used).

If pursuing the Cellular and Molecular Neuroscience focus area, AS.020.306 and AS.020.316 must be selected as one of the two required biology courses with lab.

Research **

Six credits of neuroscience research

AS.080.500 Scientific Communication: Neuroscience 0.5

* For students with AP Biology credit, they may use only one course and its lab from those credits towards this requirement. Therefore, these students must take at least one biology course and its lab at JHU. Students who elect to take General Biology I or II with its lab will lose the corresponding AP credits. Students should also refer to AP credit policies for additional details around the use of AP Biology credits.

** Research must be conducted in one of the neuroscience laboratories participating in the program. Students must register for AS.080.500 Scientific Communication: Neuroscience concurrently with neuroscience research each term they register for research until they have completed 6 credits of research.

<table>
<thead>
<tr>
<th>Course #3</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II 4</td>
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<tr>
<td>or AS.171.104</td>
<td>General Physics/Biology Majors II</td>
<td></td>
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</tr>
<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
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<td></td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
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</tbody>
</table>

Biology Sequence

Two biology courses with lab selected from the following:

AS.020.151 | General Biology I
& AS.020.153 | and General Biology Laboratory I (see footnote about AP Biology credits) *

AS.020.152 | General Biology II
& AS.020.154 | and General Biology Lab II (see footnote about AP Biology credits) *

AS.020.303 | Genetics
& AS.020.340 | and Developmental Genetics Lab

AS.020.305 | Biochemistry
& AS.020.315 | and Biochemistry Project lab
or AS.250.254 | or Protein Engineering and Biochemistry Lab
or AS.250.25 | or Protein Biochemistry and Engineering Laboratory

AS.020.306 | Cell Biology
& AS.020.316 | and Cell Biology Lab

AS.020.374 | Comparative Animal Physiology
& AS.020.377 | and Comparative Physiology Lab

Advanced Neuroscience Elective Courses and Focus Area

Nine credits of 300-level or higher approved courses from one of four focus areas: systems neuroscience, cognitive neuroscience, computational neuroscience, or cellular and molecular neuroscience.

Three credits of 300-level or higher approved course outside of focus area selected above.

If pursuing the Computational Neuroscience focus area, EN.553.291 is required in addition to the other 12 credits required of the focus area (or the combo of AS.110.201/212 and AS.110.302 may be used).

If pursuing the Cellular and Molecular Neuroscience focus area, AS.020.306 and AS.020.316 must be selected as one of the two required biology courses with lab.

Research **

Six credits of neuroscience research

AS.080.500 Scientific Communication: Neuroscience 0.5

* For students with AP Biology credit, they may use only one course and its lab from those credits towards this requirement. Therefore, these students must take at least one biology course and its lab at JHU. Students who elect to take General Biology I or II with its lab will lose the corresponding AP credits. Students should also refer to AP credit policies for additional details around the use of AP Biology credits.

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<table>
<thead>
<tr>
<th>Course #1</th>
<th>Fall Credits</th>
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<tbody>
<tr>
<td>AS.171.102</td>
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<tr>
<td>or AS.171.104</td>
<td>General Physics/Biology Majors II</td>
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<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
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<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
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Freshman

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<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
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<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
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<tr>
<td>AS.110.106</td>
<td>Calculus I (Biology and Social Sciences)</td>
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<th>Course #3</th>
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<tbody>
<tr>
<td>AS.080.250</td>
<td>Neuroscience Laboratory</td>
<td>3 Upper Level Neuroscience Course #4</td>
<td>3</td>
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<tr>
<td>AS.080.554</td>
<td>Neuroscience Research - Juniors</td>
<td>3</td>
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<thead>
<tr>
<th>Course #4</th>
<th>Fall Credits</th>
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<tbody>
<tr>
<td>AS.080.554</td>
<td>Neuroscience Research - Juniors</td>
<td>3</td>
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</tbody>
</table>

| Total Credits | | | |
|---------------|----------------|---------|
| 71-73 | | | |
Honors in the Major
To receive honors in Neuroscience, students must meet the following criteria:

- Earn a GPA of 3.5 or better in major requirements
- Conduct research and give a research presentation
- Receive a recommendation from research mentor
- Three (3) additional Neuroscience Research credit(s) beyond the required 6 credits for the major (Effective for students entering Fall 2016)

Graduate Program
Requirements for the B.S./M.S. Degree
Current JHU undergraduate Neuroscience majors who wish to apply for the B.S./M.S. Program in their junior or senior year must meet the following minimum requirements (prior to applying):

- A minimum 3.5 GPA in all required courses for the undergraduate major and cumulative GPA of 3.5.
- Completion of all courses required 6 credits of research for the JHU B.S. degree in Neuroscience.

Advanced Seminars in Neuroscience (6 credits)
The Advanced Seminar in Neuroscience is offered in the fall and spring terms.

Final Spring Courses (12 credits)
Degree requirements include 12 credits of additional advanced course work (300-level or above). At least three credits must be at 400-level or above. Courses must be related to the study of neuroscience and ideally focused on the student’s concentration of study and area of research. Students may choose courses from the approved list of undergraduate advanced courses. (In addition, up to six additional credits of the Advanced Seminar in Neuroscience, and/or statistics courses, graduate courses and seminars may be taken with the approval of the program director.)

Mentored Research (24 credits)
During the research year, students will complete a total of 24 credits of mentored research. Students must complete nine credits of research in a spring academic term, six in the summer and an additional nine in the fall.

B.S./M.S. Commencement Project (1 credit)
After completing the research year, students must register for a one-credit independent study course intended to track the progress and defense of the student’s final research project.

Note: This masters degree is only open to current Johns Hopkins University undergraduate students pursuing a major in neuroscience.

For current faculty and contact information go to https://krieger.jhu.edu/neuroscience/people/

Faculty
Chair
Hey-Kyoung Lee, Ph.D.
Professor, Mind/Brain Institute

Director of Undergraduate Studies
Linda Gorman, Ph.D.
Teaching Professor, Psychological and Brain Sciences

Director of BS/MS Program
Jay Baraban, MD., Ph.D.
Psychological and Brain Sciences

Professors
Patricia Janak, Ph.D.
Psychological and Brain Sciences
Michael McCloskey, Ph.D.
Cognitive Science
Brenda Rapp, Ph.D.
Cognitive Science
Haiqing Zhao, Ph.D.
Biology

Assistant Professors
Robert Johnston, Ph.D.
Biology
Shreesh Mysore, Ph.D.
Psychological and Brain Sciences
Vikram Chib, Ph.D.
Biomedical Engineering

Lecturers
Hita Adwanikar, Ph.D
Psychological and Brain Sciences
Dani Smith, Ph.D.
Psychological and Brain Sciences
Jason Trageser, Ph.D.
Senior Lecturer, Psychological and Brain Sciences
Susanne Sterbing-D’Angelo
Psychological and Brain Sciences

For current course information and registration go to https://sis.jhu.edu/classes/
Courses

**AS.080.203. Neuroscience: Cognitive. 3.0 Credits.**
This course surveys theory and research concerning how the human brain carries out mental processes. The sections of this course correspond with the sections listed for AS.020.203. All sections will meet together on exams day and guest lecture days. Co-listed as AS.050.203 in Cognitive Science. It's strongly recommended that students have background in one of the following courses: AS.050.101 OR AS.050.105 OR AS.200.141.
Instructor(s): J. Tragerser; L. Gorman
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.080.250. Neuroscience Laboratory. 3.0 Credits.**
This course will give students the "hands-on" experience of the interdisciplinary nature of neuroscience. Students will use anatomical and neuro-physiological techniques to understand the basic underlying principles of neuroscience. There will be a total of 13 class meetings during the summer session. Course open to JHU undergraduates only.
Prerequisites: ( AS.080.305 AND AS.080.306 ) OR AS.200.141
Instructor(s): J. Tragerser; L. Gorman
Area: Natural Sciences.

**AS.080.260. Bridging the gap between Biology and Statistics. 1.0 Credit.**
This course is designed to support the lectures and assignments in Probability and Statistics in Life Sciences, EN.553.211. This one-hour a week course is led by a behavioral biology professor with extensive expertise in statistics and mathematics. The primary goal of this course is to increase success and understanding of EN.553.211 by bridging the gap between theoretical statistics and biological thinking. In addition, when possible, examples and direct applications in neuroscience and behavioral biology will be presented to provide a context for EN.553.211 materials.
Instructor(s): K. Bohn.

**AS.080.301. Behavioral Assessment of Animal Models of Cognition and Neuropsychiatric Disorders. 3.0 Credits.**
What does a rat exploring it’s environment tell us about memory? How can a mouse help us better understand schizophrenia? This course will focus on procedures that are routinely used to study behavior in animal models of cognition and neuropsychiatric disorders. Topics will include motor function, emotional and motivational states, disorders such as dementia and schizophrenia, among others. Throughout the course, we will read and discuss original research articles to illustrate and compare some of the measures and results from the various procedures.
Prerequisites: Students may not have taken AS.200.302;AS.200.141 OR (AS.080.305 and AS.080.306), OR by instructor permission.
Instructor(s): D. Smith
Area: Social and Behavioral Sciences.

**AS.080.303. Structure of the Nervous System. 3.0 Credits.**
This course takes a structural biological approach to studying the nervous system. In using a systems approach it provides students of cellular-molecular and computational neuroscience with a thorough introduction to functional, microscopic and submicroscopic organization of the brain, spinal cord and peripheral nervous system.
Prerequisites: AS.080.305 AND AS.080.306
Instructor(s): S. Hendry
Area: Natural Sciences.

**AS.080.304. Neuroscience Learning and Memory. 3.0 Credits.**
This course is an advanced survey of the scientific study of learning and memory. Different perspectives will be used to review the science of learning and memory including the cellular-molecular basis of synaptic plasticity, the functional circuitry involved in learning and memory and memory systems in the brain. The course is designed to provide a deep understanding of the issues and current debates in learning and memory research and focuses specifically on animal models of memory and memory impairment. This is an interactive lecture course with a strong emphasis on student participation.
Instructor(s): A. Bakker
Area: Natural Sciences.

**AS.080.305. Neuroscience: Cellular and Systems I. 3.0 Credits.**
(Formerly Nervous Systems I) Neuroscience: Cellular and Systems I is a fully integrated, two-semester course that surveys the cellular and molecular biology of neurons as well as the structure and function of the nervous system. Students must register for Neuroscience: Cellular and Systems II offered in the second term. Course open to JHU undergraduates only.
Prerequisites: AS.080.203 OR AS.050.203 OR AS.200.141 or 080.105 or Permission
Instructor(s): H. Zhao; S. Hendry
Area: Natural Sciences.

**AS.080.306. Neuroscience: Cellular and Systems II. 3.0 Credits.**
(Formerly Nervous Systems II) Neuroscience: Cellular and Systems II uses the functional organization of the somatosensory system as a means to examine mechanisms of neutral development. Generation and maturation of neurons, guidance of axons, formation of synapses and the regressive events that shape the adult nervous system will be examined. At the same time we will explore the structure and function of brain regions that allow us to feel pain and temperature, detect vibration, recognize shape and perceive where we are in space. Finally, the single-neuron events that lead to adaptive changes in function will be explored in the context of central nervous system control of movement and of higher order functions of speech and memory. Students who do not register for Neuroscience: Cellular and Systems I offered during the first term should not register for this class.
Prerequisites: AS.080.305
Instructor(s): H. Zhao; S. Hendry
Area: Natural Sciences.
AS.080.308. Neuroeconomics. 3.0 Credits.

Every day decisions often require us to weigh the costs and benefits of engaging in a particular course of action in order to obtain some expected outcome. Unfortunately, we often lack the information necessary to obtain our desired goal with complete certainty. Economists have long been interested in understanding human decision-making under these circumstances. In parallel, neuroscientists have made great strides at describing the underlying neural basis of simple decision-making. However, despite much progress in both fields, our understanding of how the brain makes decisions is incomplete. In order to strengthen and further research in both fields, the interdisciplinary field of Neuroeconomics arose. This course will survey the field of Neuroeconomics focusing on theoretical concepts developed by economists and the role these theories are playing in guiding current experimental neuroscience. Recommended Course Background: AS.080.305 and AS.080.306 or AS.200.141 and AS.020.306 or AS.200.141 OR AS.200.312 OR AS.020.312 or permission.

Prerequisites: Pre-reqs: AS.080.306 OR AS.200.141 OR AS.020.312

Instructor(s): J. Trageser

Area: Natural Sciences.

AS.080.310. Communication Between Cells: The Synapse as a Model System. 3.0 Credits.

Biochemistry (020.305) & Cell Biology (020.306) or 080.304 All cells inform neighbors of their own activities. That act of communication frequently requires the formation of cell junctions across which information can pass. One of the best studied of the means of communication between cells is the synapse between neurons. This course examines the synapse in depth. both as a means to look at the nature of neuronal communication and as a model for communication across cells of all types. Lectures on the physiology, structure, biochemistry and cell biology of synapses will be used as an introduction to the function of synapses in learning and memory and the effect on synapses of drugs and disease. (CM)

Prerequisites: Pre-reqs: AS.020.306 OR ( AS.080.304 AND AS.080.306 )

Instructor(s): A. Kirkwood; H. Lee

Area: Natural Sciences.

AS.080.317. Developmental Neurobiology: Signaling in Development and Disease. 3.0 Credits.

An advanced undergraduate level seminar on current topics on signal transduction mechanisms underlying neuronal morphology, development and function. The proper functioning of the nervous system relies on the establishment of precise neuronal circuits through a developmental program including proliferation, neuronal migration, axonal growth, and neuronal survival. This course pertains to the extracellular cues and downstream neuronal signaling pathways that coordinate the key events during neuronal development. The course will also cover the role of aberrant signaling mechanisms in neuronal degeneration and disease. Recommended Course Background: AS.020.305 and AS.020.306.

Prerequisites: Pre-req: AS.080.306

Instructor(s): R. Kuruvilla

Area: Natural Sciences.

AS.080.320. The Auditory System. 3.0 Credits.

This course will cover the neuroanatomy and neurophysiology of the human auditory system from the ear to the brain. Behavioral, electrophysiological, and neuroimaging methods for assessing peripheral and central auditory function will be discussed. Acquired and developmental disorders of auditory function will be reviewed using clinical case studies.

Prerequisites: AS.080.305 OR AS.080.203 OR AS.050.203 OR AS.200.141 OR AS.020.312 or permission of the instructor.

Instructor(s): D. Boatman

Area: Natural Sciences.

AS.080.321. Computational Neuroscience. 3.0 Credits.

This course is designed to give students an overview of computational neuroscience. The topics discussed will cover many exciting domains of the field including neural coding, decision-making, learning, attention and connectomics. Lectures will be complemented with hands on experience working with computational models using Matlab and/or other programming language. The overarching goal of the course is to increase overall literacy in the field of computational neuroscience and to gain an appreciation of the interplay between experimental and theoretical neuroscience.

Prerequisites: EN.553.291 OR (AS.110.302 AND (AS.110.201 OR AS.110.212)). Students should be familiar with programming.

Instructor(s): J. Trageser

Area: Natural Sciences.

AS.080.322. Cellular and Molecular Biology of Sensation. 3.0 Credits.

Leading scientists in sensory biology from the Johns Hopkins community will present the most current knowledge in the cellular and molecular biology of sensation. A lecture and a student presentation of an exemplar manuscript will be presented each week on a different topic of sensory systems.

Instructor(s): P. Fuchs

Area: Natural Sciences.

AS.080.326. Neurobiology and Diseases of the Peripheral Nervous System. 3.0 Credits.

This course will cover neurobiology and disorders of the peripheral nervous system (PNS). A particular emphasis will be on cellular interactions within the PNS and with target tissues. For example, the two principal components of the peripheral nervous system are axons and Schwann cells: have intimate and continuous cellular communications that are critical for physiological function of the PNS. The course will teach how these cellular interactions are developed, maintained throughout life, and are impacted by injury and diseases.

Prerequisites: AS.080.305 AND AS.080.306

Instructor(s): M. Farah

Area: Natural Sciences

Writing Intensive.

AS.080.328. Behavioral Neuroscience Lab. 3.0 Credits.

Class designed to give students first-hand knowledge of the behavioral procedures and techniques used to study behavior in the field of neuroscience. Students will gain hands-on experience by carrying out some of the behavioral tasks used to assess animals under specific behavioral domains, discuss why certain aspects (i.e. genotype, environment conditions, group size, etc.) are important factors to consider when designing, planning, and carrying out such experiments, and learn the relevance of behavioral research in translational medicine.

Prerequisites: AS.200.141 OR AS.200.302 OR AS.080.301 OR (AS.080.305 AND AS.080.306) or permission by instructor.

Instructor(s): D. Smith

Area: Natural Sciences.
AS.080.330. Brain Injury & Recovery. 3.0 Credits.
This course investigates numerous types of brain injuries and explores the responses of the nervous system to these injuries. The course’s primary focus is the cellular and molecular mechanisms of brain injury and the recovery of function. Discussions of traumatic brain injury, stroke, spinal cord, and tumors, using historical and recent journal articles, will facilitate students’ understanding of the current state of the brain injury field. Cross-listed with Psychological and Brain Sciences and Behavioral Biology.
Prerequisites: AS.080.305 AND AS.080.306
Area: Natural Sciences
Writing Intensive.

AS.080.336. Effects of Other Organs on the Nervous System Function. 3.0 Credits.
Both classical and recent primary research papers that deal with cross signaling of other major organs with the nervous system, particularly the central nervous system, will be discussed. Students will be exposed to emerging literature on how peptides, signaling molecules, and hormones effect the nervous system function both in health and in diseases.
Instructor(s): M. Farah
Area: Natural Sciences
Writing Intensive.

AS.080.345. Great Discoveries in Neuroscience. 3.0 Credits.
This course examines the historical and intellectual context of selected, key advances in neuroscience, how they were made and the impact they had on an understanding of the nervous system. Particular attention will be paid to advances in cellular and molecular neuroscience. Among the topics covered will be the discovery of monoamine neurotransmitters and of endocannabinoids, the role of neurotrophins in neural development, and prion-based diseases of the brain.
Prerequisites: Pre-reqs: AS.080.306
Instructor(s): J. Baraban
Area: Natural Sciences
Writing Intensive.

AS.080.348. Science of Learning. 3.0 Credits.
Can we know about the brain guide how we learn or teach in our schools? This seminar course is designed to address this question. In this course we will focus on the science of what we know about learning and teaching (and not the politics) to see if we can actually use the research to “optimize learning in society”. As we read the literature, we will look at some of the “neuromyths” that have been propagated thus far and discuss how to avoid creating new neuromyths by effectively communicating the research.
Prerequisites: Pre-reqs: AS.080.306 OR AS.200.141
Instructor(s): L. Gorman
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

AS.080.357. Developmental Neuroscience. 3.0 Credits.
The developmental neuroscience course will cover principles of neural development. The course will focus on major events in neural development: patterning and growth of the nervous system, neuronal determination, axonal navigation and targeting, neuron survival and death, synapse function, developmental plasticity, and behavioral and cognitive development.
Prerequisites: AS.080.305 AND AS.080.306
Instructor(s): M. Farah.

AS.080.360. Diseases & Disorders of the Nervous System. 3.0 Credits.
Prerequisites: Pre-reqs: (EN.580.421 AND EN.580.422) OR (AS.020.305 AND AS.020.306 ) OR AS.080.306 OR By Permission.
Instructor(s): K. Wagner; S. Hendry
Area: Natural Sciences.

AS.080.362. Neurobiology of Hearing. 3.0 Credits.
The course focuses on sound processing, including current research topics in Auditory Neuroscience, including synaptic physiology, neural circuitry, acoustics, physiology, and behavior. Course taught in Salamanca. This course fulfills upper-level Neuroscience electives. Course must be taken for a grade.
Instructor(s): Staff
Area: Natural Sciences
Writing Intensive.

AS.080.366. Neuroscience of Pain. 3.0 Credits.
This course is a systems-oriented course focusing on the basic neural processing of pain signals in both the spinal cord and the brain. Class lectures will cover the anatomical and molecular basis for the transmission and perception of pain signals, basic concepts such as allodynia, hyperalgesia, peripheral and central sensitization, remodeling, the pathophysiology of chronic pain disorders and the cognitive and emotional aspects of pain. We will also discuss the regulation of pain signals by descending systems, and current practices and new advances in the treatment of pain.
Prerequisites: Pre-reqs: AS.080.306 OR AS.020.312 OR AS.020.316 OR AS.200.141 OR INSTRUCTOR’S PERMISSION
Instructor(s): H. Adwanikar
Area: Natural Sciences, Social and Behavioral Sciences.

AS.080.370. The Cerebellum: Is it just for motor control?. 3.0 Credits.
The cerebellum is traditionally thought to be involved in movement and motor control, and observations of patients with cerebellar damage do in fact show motor deficits. However, since the proliferation of functional MRI, cerebellar activations have been observed in a surprising number of brain activation studies that were designed to investigate the neural correlates of cognitive function. Over the past 2 decades, an increasing number of investigators have tried to characterize the role of the cerebellum in cognitive function. Through lectures and reading discussions this course will survey cerebellar circuitry, neuroimaging and neuromodulatory methods for investigating the cerebellum, and traditional and non-traditional functions of the cerebellum, including cerebellar involvement in cognitive functions such as language, working memory, and executive control.
Prerequisites: Pre-reqs: (AS.080.306 AND AS.080.203 ) OR AS.050.203
Instructor(s): J. Desmond
Area: Natural Sciences, Social and Behavioral Sciences.

AS.080.400. Research Practicum: Language Disorders-Community Based Learning. 2.0 Credits.
This course provides the opportunity to learn about adult aphasias; language disorders which are one of the most common consequence of stroke. You will receive training in Supportive Communication Techniques and work as a communication partner with an individual with aphasia for two hours per week. Three class meetings for orientation and reading assignments will be held on campus; training and practicum will be conducted at a local aphasia support center. Transportation required. A valid driver’s license for zip car use. This is a two (2) credit practicum.
Instructor(s): B. Rapp
Area: Natural Sciences, Social and Behavioral Sciences.
AS.080.411. Advanced Seminar: Neuroscience I. 3.0 Credits.
For students in the first semester of the BS/MS Program. Instructor
permission required.
Instructor(s): J. Baraban
Area: Natural Sciences.

AS.080.412. Advanced Seminar: Neuroscience II. 3.0 Credits.
For students in the 2nd semester of the BS/MS Program.
Instructor(s): J. Baraban
Area: Natural Sciences.

AS.080.413. Advanced Seminar: Neuroscience III. 3.0 Credits.
For students in the 3rd semester of the BA/MS Program.
Instructor(s): J. Baraban
Area: Natural Sciences.

AS.080.500. Scientific Communication: Neuroscience. 0.5 Credit.
Scientific communication is crucial to advancing science. The Scientific
Communication section is taken concurrently with Neuroscience
Research and consists of a two hour research orientation session held
at the beginning of the semester and a two hour exit session held at
the end of the semester. The student is also expected to meet with their
lab supervisor or attend a lab meeting once a week to understand the
research the lab is currently working on and receive feedback on the work
they are doing. See special notes section for specific meeting day/time.
Students must sign up for Scientific Communication prior to signing
up for NS Research until they complete their 6 credits of research. See
Neuroscience Research website for more details.
Corequisites: Co-reqs: AS.080.531OR AS.080.541 OR AS.080.551 OR
AS.080.561
Instructor(s): Staff.

AS.080.511. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): L. Gorman.

AS.080.512. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): L. Gorman.

AS.080.531. Research Neuroscience-Freshmen. 1.0 - 3.0 Credits.
Corequisites: AS.080.500 (Scientific Communication)
Instructor(s): Staff.

AS.080.534. Neuroscience Research- Freshmen. 0.0 - 3.0 Credits.
Corequisites: AS.080.500[C]
Instructor(s): Staff.

AS.080.541. Research Neuroscience - Sophomores. 1.0 - 3.0 Credits.
Corequisites: AS.080.500 (Scientific Communication)
Instructor(s): Staff.

AS.080.544. Neuroscience Research-Sophomores. 0.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): Staff.

AS.080.550. Neuroscience BS/MS Summer Research - Seniors.
This summer research course is only for Neuroscience BS/MS students
that are seniors in the program over the summer.
Instructor(s): J. Baraban.

AS.080.551. Research Neuroscience for Juniors. 1.0 - 3.0 Credits.
Corequisites: AS.080.500 (Scientific Communication)
Instructor(s): Staff.

AS.080.554. Neuroscience Research - Juniors. 0.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): Staff.

AS.080.561. Research Neuroscience for Seniors. 1.0 - 3.0 Credits.
Corequisites: AS.080.500 (Scientific Communication)
Instructor(s): Staff.

AS.080.564. Neuroscience Research - Seniors. 0.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): Staff.

AS.080.572. Direct Readings/Independent Study. 0.0 - 3.0 Credits.
Instructor(s): J. Baraban; L. Gorman.

AS.080.582. Neuroscience: Internship. 1.0 - 3.0 Credits.
Instructor(s): L. Gorman.

AS.080.590. Independent Study. 1.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): J. Baraban; L. Gorman.

AS.080.592. Research-Freshmen. 1.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): Staff.

AS.080.594. Research-Sophomores. 1.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): Staff.

AS.080.595. Neuroscience: Internship. 1.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): L. Gorman.

AS.080.596. Research-Juniors-Summer. 1.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): Staff.

AS.080.597. Internship: Neuroscience. 1.0 - 3.0 Credits.
Instructor(s): L. Gorman.

AS.080.598. Research-Seniors-Summer. 1.0 - 3.0 Credits.
Corequisites: AS.080.500
Instructor(s): Staff.

AS.080.600. Neuroscience Research: BA/MS Undergraduate.
This course is ONLY for Neuroscience BA/MS students that are in the
program during their undergraduate senior year. This course is similar
to the course that the BA/MS graduate students take but is for BA/MS
Seniors in their 7th semester summer period.
Instructor(s): J. Baraban.

AS.080.601. Neuroeconomics -Graduate Level.
Every day decisions often require us to weigh the costs and benefits
of engaging in a particular course of action in order to obtain some
expected outcome. Unfortunately, we often lack the information
necessary to obtain our desired goal with complete certainty. Economists
have long been interested in understanding human decision-making
under these circumstances. In parallel, neuroscientists have made
great strides at describing the underlying neural basis of simple
decision-making. However, despite much progress in both fields, our
understanding of how the brain makes decisions is incomplete. In order
to strengthen and further research in both fields, the interdisciplinary
field of Neuroeconomics arose. This course will survey the field of
Neuroeconomics focusing on theoretical concepts developed by
economists and the role these theories are playing in guiding current
experimental neuroscience. Only graduate students can register for this
course. Instructor signature is required.
Instructor(s): J. Trageser.
This experiential learning experience provides the opportunity to learn and interact with children recovering from brain, spinal, and musculoskeletal injuries. Students will travel to the Kennedy Krieger Institute to volunteer in the Child Life Department where they will participate in a variety of therapeutic activities including playing with the children and helping them achieve goals on Saturdays (days/times TBA). Students will gain valuable clinical experience while learning patient empathy. Students MUST attend a mandatory orientation and a mandatory exit session held on the Homewood campus (see section web notes for days/times). Students are required to present a written description of their experiences and to discuss their experiences at the exit session. Transportation will be provided by the JHMI shuttle. No credit - S/U Grading Only
Instructor(s): L. Gorman.

In this experiential learning experience, students will work with children who have a variety of neurological disabilities, including autism, cerebral palsy and Down syndrome through exercise and recreational activities. We partner with the KEEN (Kids Enjoy Exercise Now), a nonprofit organization. Student “coaches” will receive a profile for the KEEN athlete that they will pair up with during a session. Students will receive initial training and then select 4 sessions to attend. Sessions are held on the first and third Sunday of each month during the semester at KEEN centers in Maryland. Students MUST attend a mandatory orientation and a mandatory exit session held on the Homewood campus (see section web notes for days/times). Students are required to present a written description of their experiences and to discuss their experiences at the exit session. Transportation will be via student carpools using Zipcars, personal vehicles or Hop Vans. No credit - S/U Grading Only
Instructor(s): L. Gorman.

AS.080.614. Experiential Learning: STEM in the Classroom.
STEM subjects are particularly important in today's society and getting students interested in these areas early is crucial. Working with Making Neuroscience Fun (MNF), a community outreach program, which brings age-appropriate interactive presentations about the brain and nervous system to Baltimore city and county elementary school students, our students share their love of the sciences with young children. The elementary school students learn about the nervous system and our students learn valuable communication skills. Hopkins students will receive initial training prior to participating and will select and present 6, 45-minute presentations. In order to participate, students must be available either 7am-11am or 11am-3pm at least one day per week, Monday-Friday. Students MUST attend a mandatory orientation, a mandatory training and a mandatory exit session held on the Homewood campus (see section web notes for days/times). Students are required to present a written description of their experiences and to discuss their experiences at the exit session. Students will also be given the opportunity to work with the faculty to develop new materials for the program. Presentations will take place at Baltimore city and county elementary schools. Transportation to the schools will be via student carpools using Zipcars or personal vehicles. No credit - S/U Grading Only
Instructor(s): L. Gorman.

AS.080.616. Experiential Learning: Working with Children in the Clinic.
This experiential learning experience provides students the opportunity to learn, play and interact with children receiving treatment in over 20 different specialties including dermatology, endocrine, GI, immunology, urology, plastics and hematology. Students will volunteer in outpatient clinics at the Johns Hopkins Children’s Center where they will encourage, play and participate in a variety of activities including art projects, coloring, board games, and reading. Students will gain valuable clinical experience and be exposed to a wide range of children with a variety of diseases/illnesses. Students MUST attend a mandatory orientation and a mandatory exit session held on the Homewood campus (see section web notes for days/times). Students will sign up for 5 shifts on a first-come, first-serve basis after the mandatory orientation. Shifts are Mondays 1pm-3pm, Tuesdays 10am-12pm, Wednesdays 1pm-3pm, Thursdays 10am-12pm and Fridays 10am-12pm throughout the semester. There is a limit of 4 students per session. Students are required to present a written description of their experiences and to discuss their experiences at the exit session. Volunteer shifts will take place at outpatient clinics in the Rubenstein Child Health Building. Transportation will be provided by the JHMI shuttle. No credit - S/U Grading Only
Instructor(s): L. Gorman.

AS.080.620. Theoretical Neuroscience.
Topics of theoretical neuroscience and computational neuroscience will be discussed based on the original literature. Students are expected to actively participate in the discussion and also to present selected material to the class.
Instructor(s): E. Niebur.

AS.080.630. Bodian Seminar Series.
The Bodian Seminar is an interdisciplinary colloquium for discussion of current research into the neural basis of mental processes. Leading researchers, generally from outside the University, are invited to give lectures, which will be announced per e-mail. Undergraduate students who register for this course are asked to study a publication by the speaker, as provided with the announcement, and to prepare a question for each speaker together with a brief discussion of the possible answers. Permission required for undergraduate students.
Instructor(s): V. Stuphorn.

Graduate students and Seniors with instructor permission. The Bodian Seminar is an interdisciplinary colloquium for discussion of current research into the neural basis of mental processes. Leading researchers, generally from outside the University, are invited to give lectures. About 12 lectures are scheduled per semester (see http://www.mb.jhu.edu/seminars.asp). Speakers, titles of lectures, and dates are announced to participants per e-mail (contact Debby Kelly, 410 516-8640). The announcements also include links to one or two recent publications of the speaker. Undergraduate students who register for this course are asked to study these papers and to prepare a question for each speaker together with a brief discussion of the possible answers. Question and discussion have to be in writing and turned in the day before the lecture. Undergraduates must e-mail the instructor for permission (von.der.heydt@jhu.edu) prior to registering for the course.
Instructor(s): V. Stuphorn.
AS.080.660. Commencement Project.
This course is for BA/MS students that have completed their year of research and are now working on their final thesis. In this course, students devote their semester to preparing their final thesis documentation and move forward with their Master's Thesis Defense which is the last piece to the program. This course is for BA/MS student only and students should only register for this course in their last semester in the program.
Instructor(s): J. Baraban.

AS.080.850. Mentored Research: Neuroscience I.
For students in the BA/MS Program first semester. Permission required.
Instructor(s): J. Baraban.

Instructor(s): L. Gorman
Writing Intensive.

AS.080.852. Mentored Research: Neuroscience II.
Permission Required. For students in the BA/MS Program.
Instructor(s): J. Baraban.

AS.080.854. Mentored Research: Neuroscience III.
For students in the BA/MS Program Permission required.
Instructor(s): J. Baraban.

Cross Listed Courses

Biology
AS.020.317. Signaling in Development and Disease. 3.0 Credits.
An advanced undergraduate level seminar on current topics on signal transduction mechanisms underlying neuronal morphology, development and function. The proper functioning of the nervous system relies on the establishment of precise neuronal circuits through a developmental program including proliferation, neuronal migration, axonal growth, and neuronal survival. This course pertains to the extracellular cues and downstream neuronal signaling pathways that coordinate these key events during neuronal development. The course will also cover the role of aberrant signaling mechanisms in neuronal degeneration and disease. Recommended Course Background: AS.020.305, AS.020.306, and AS.080.306
Instructor(s): R. Kuruvilla
Area: Natural Sciences.

Cognitive Science
AS.050.102. Language and Mind. 3.0 Credits.
Introductory course dealing with theory, methods, and current research topics in the study of language as a component of the mind. What it is to "know" a language: components of linguistic knowledge (phonetics, phonology, morphology, syntax, semantics) and the course of language acquisition. How linguistic knowledge is put to use: language and the brain and linguistic processing in various domains. Cross-listed with Neuroscience and Psychology.
Instructor(s): C. Wilson
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.105. Introduction to Cognitive Neuropsychology. 3.0 Credits.
When the brain is damaged or fails to develop normally, even the most basic cognitive abilities (such as the ability to understand words, or perceive objects) may be disrupted, often in remarkable ways. This course explores a wide range of cognitive deficits, focusing on what these deficits can tell us about how the normal brain works. Topics include brain anatomy and causes of brain damage, reading and spelling deficits, unilateral spatial neglect, hemispheric disconnection, cortical plasticity, and visual perception of location and orientation. Students read primary sources: journal articles that report deficits and discuss their implications.
Instructor(s): M. McCloskey
Area: Natural Sciences, Social and Behavioral Sciences.

When we think about our ability to see, we tend to think about our eyes, but in fact vision happens mostly in the brain. This course explores the remarkable perceptual deficits that occur when the visual regions of the brain are damaged or fail to develop normally, focusing on what these perceptual malfunctions tell us about normal visual perception. Topics include visual system anatomy and physiology; functional specialization in the lower visual system as revealed by cerebral achromatopsia (color blindness resulting from brain damage) and akinetopsia (impaired motion perception); cortical plasticity in the visual system; spatial deficits in perception and action; and the implications of high-level visual deficits, including prosopagnosia (impaired face recognition), Charles Bonnet syndrome (complex visual hallucinations in blind areas of the visual field), blindsight (accurate responding to visual stimuli despite apparent inability to see them), and Anton's syndrome (denial of blindness).
Prerequisites: AS.050.105 OR AS.050.203 OR AS.080.203 OR AS.050.101 OR AS.200.110 OR AS.200.211 or instructor's permission.
Instructor(s): M. McCloskey
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.326. Foundations of Cognitive Science. 3.0 Credits.
This course explores general issues and methodologies in cognitive science through the reading of classic works (from Plato and Kant through Skinner and Turing) and recent research articles to begin construction of a coherent picture of many seemingly divergent perspectives on the mind/brain. Recent brain-based computational models serve to focus discussion. Also offered as AS.050.626.
Instructor(s): P. Smolensky
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

AS.050.332. Developmental Cognitive Neuroscience. 3.0 Credits.
In-depth examination of the current literature on cognitive development in the context of developmental cognitive neuroscience. Please see course prerequisites. Meets with AS.050.632.
Prerequisites: AS.050.101 OR AS.050.339 OR AS.200.132 OR AS.050.105 OR Instructor's permission.
Instructor(s): B. Landau
Area: Natural Sciences, Social and Behavioral Sciences.
AS.050.339. Cognitive Development. 3.0 Credits.
This is a survey course in developmental psychology designed for individuals with some basic background in psychology or cognitive science, but little or none in development. The course is strongly theoretically oriented, with emphasis on issues of nature, and development psychology as well as relevant empirical evidence. The principle focus will be early development, i.e., from conception through middle childhood. The course is organized topically, covering biological and prenatal development, perceptual and cognitive development, the nature and development of intelligence, and language learning.
Instructor(s): J. Yarmolinskaya
Area: Natural Sciences, Social and Behavioral Sciences.

Also offered as AS.050.326. This course explores general issues and methodologies in cognitive science through the reading of classic works (from Plato and Kant through Skinner and Turing) and recent research articles to begin construction of a coherent picture of many seemingly divergent perspectives on the mind/brain. Recent brain-based computational models serve to focus discussion.
Instructor(s): P. Smolensky
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

Also offered as AS.050.339. This is a survey course in developmental psychology designed for individuals with some basic background in psychology or cognitive science, but little or none in development. The course is strongly theoretically oriented, with emphasis on issues of nature, and development psychology as well as relevant empirical evidence. The principle focus will be early development, i.e., from conception through middle childhood. The course is organized topically, covering biological and prenatal development, perceptual and cognitive development, the nature and development of intelligence, and language learning.
Instructor(s): J. Yarmolinskaya.

Psychological Brain Sciences

AS.200.141. Foundations of Brain, Behavior and Cognition. 3.0 Credits.
A survey of neuropsychology relating the organization of behavior to the integrative action of the nervous system. Cross-listed with Behavioral Biology and Neuroscience.
Instructor(s): L. Gorman
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.302. Behavioral Assessment of Animal Models of Cognition and Neuropsychiatric Disorders. 3.0 Credits.
What does a rat exploring its environment tell us about memory? How can a mouse help us better understand schizophrenia? This course will focus on procedures that are routinely used to study behavior in animal models of cognition and neuropsychiatric disorders. The procedures discussed will include assessments that fall into 3 broad functional domains: motor function, affective or emotional states, and cognition. Throughout the course, we will read and discuss original research articles to illustrate and compare some of the measures and results from the various procedures. Postdoc Teaching Fellowship. This is designed to be an upper level course.
Prerequisites: Pre-reqs: AS.200.141 OR (AS.080.305 AND AS.080.306) or permission of the instructor.
Instructor(s): D. Smith
Area: Social and Behavioral Sciences.

AS.200.304. Neuroscience of Decision Making. 3.0 Credits.
This course will survey the neural mechanisms of decision-making. Current experimental research and theory concerning selection, control, and evaluation of actions are examined in humans and animals. Topics will range from simple perceptual judgements to complex social behavior. The course involves a weekly lecture about a specific topic followed by a student presentation of a current research paper. Cross-listed with Neuroscience.
Prerequisites: AS.080.305 OR AS.200.141
Instructor(s): V. Stuphorn
Area: Natural Sciences.

AS.200.344. Behavioral Endocrinology. 3.0 Credits.
An examination of the effects of hormones on behavior in non-human and human animals. Topics will include the effects of hormones on sexual differentiation, reproductive behavior, parental behavior, homeostasis and biological rhythms, regulation of body weight, learning and memory. Cross-listed with Behavioral Biology and Neuroscience.
Prerequisites: Prereqs: (AS.200.141 OR AS.080.306) OR (AS.020.151 AND AS.020.152) OR (AS.020.305 AND AS.020.306) or instructor's permission
Instructor(s): K. Bohn
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.368. Sleep, Dreams, and Altered States of Consciousness. 3.0 Credits.
Sleep, dreaming, resting and arousal to waking represent very different states of consciousness which differ dramatically both psychologically and physiologically. This course focuses on cognitive, psychological, physiological, biological and genetic aspects characterizing each of these states with some reference to other altered states. The course includes a focus on the major pathologies affecting sleep-wake states. Clinical cases will be considered. These inform about both psychological and biological aspects of these states. The relative biological functions of each state will be evaluated with particular attention to the mystery of why we have and apparently need REM and NREM sleep. Actual physiological recordings of sleep states will be reviewed and the student will learn how these are obtained and how to evaluate these. The circadian rhythms, ontogeny and evolution of these sleep-wake states will also be covered. This will include a review of information learned from non-human animal sleep. The change from sleep to full awakening reflects change toward increasing brain organization supporting consciousness. Understanding of the neurobiology of these states will be used to explore some of the more modern and scientific concepts of human self-awareness or consciousness. Recommended Course Background: AS.200.101 OR AS.080.203 OR AS.050.203
Instructor(s): R. Allen
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.376. Psychopharmacology. 3.0 Credits.
Designed to provide information about how drugs affect the brain and behavior. The course focuses on biological concepts underlying structures and functions of the brain that relate to mental disorders. An introduction to neurobiology and brain function is presented as it applies to the interaction of various classes of drugs with the individual neurotransmitter systems in the brain. A brief historic review is followed by a discussion of clinical relevance. Cross-listed with Behavioral Biology and Neuroscience. Enrollment limited to juniors and seniors.
Prerequisites: AS.200.141 OR AS.020.306 OR AS.080.305 or Instructor Permission
Instructor(s): H. Adwanikar; S. Sterbing-d'angelo
Area: Natural Sciences, Social and Behavioral Sciences.
**Biomedical Engineering**

**EN.580.694. Statistical Connectomics. 3.0 Credits.**

This course will cover the basics of an exciting emerging field of statistical connectomics (aka, brain-graphs). It is so new, that we are going to make some of it up in this class! The first week will be introductory lectures that I give. The rest of the semester will be run like a seminar, each week will focus on a different topic. On Tuesdays we will hear about a statistical method that operates on graphs, and on Thursdays we will read about some neuroscience data upon which one could apply these techniques. The final project will consist of implementing a statistical method devised for graphs on a brain-graph problem. Recommended background: coursework in probability, linear algebra, and numerical programming (e.g., R, Python, Matlab).

Instructor(s): J. Vogelstein  
Area: Engineering.

**Philosophy**

http://philosophy.jhu.edu/

The Department of Philosophy offers programs and courses at the undergraduate and graduate levels. The courses cover major periods in the history of Western philosophy and many of the main topics of systematic investigation: epistemology, metaphysics, ethics, aesthetics, philosophy of language, mathematical logic, and philosophy of science.

The undergraduate courses are designed to introduce students to the history of philosophy and its place in Western civilization, to teach them how to read philosophical texts, and to help them think about philosophical problems, including those that arise in other disciplines. Students may major in philosophy or use it as a concentration for an area major in Humanistic Studies. They may also study philosophy along with another subject, either by constructing a double major or by taking courses designed to help them develop philosophical perspectives on their own fields of interest.

The graduate program is intended primarily for those planning to teach philosophy and make their own contributions to it. While the acquisition of a broad background in the history and different systematic fields of philosophy is required, students will have ample opportunity to develop their own special interests.

The Department of Philosophy encourages its students to take advantage of the rich resources of other departments at Johns Hopkins University. As a look at their offerings will show, numerous philosophically important courses are offered by such departments as Political Science (political philosophy), History of Science and Technology (philosophy of science), the Humanities Center (hermeneutic, interpretive, and literary theory), and Cognitive Science.

**Undergraduate Programs**

Philosophy poses such fundamental questions as: What can we know? How should we live? and How do the results of human inquiry, obtained so far, hang together? It is an excellent preparation for professional studies such as law and medicine; it provides perspective on other disciplines such as psychology, mathematics, literature, and political science; and it centers on a set of questions that thinking people cannot avoid. At Hopkins it can be studied in a variety of ways.

A number of our courses are designed to provide broad introductions to the subject. Both AS.150.111 Philosophic Classics and AS.150.112 Philosophical Problems cover a wide range of topics, the former through the study of some of the major texts of Western thought, the latter by more systematic examination of representative issues. Either one will show a student a variety of approaches to philosophical problems. The courses AS.150.201 and AS.150.205 offer historically oriented introductions to the subject, giving the student a basic grasp of the development of philosophy in two of its major periods. Other courses, such as AS.150.118 Introduction to Formal Logic, 150.223 Aesthetics, and AS.150.220 Introduction to Moral Philosophy, are designed for students with an interest in the particular areas they cover. All of these courses are readily available without prior study of philosophy.

The 400-level courses are open to graduate students as well as to undergraduates. Some require no previous course work in philosophy. Others presuppose some familiarity with philosophy, such as would be provided by one of the introductory courses. Still others require more specific preparation. A student with questions about whether he/she has the background for a particular 400-level course should consult either the instructor or the departmental undergraduate studies.

A student who wants to study an area of philosophy not provided for in the regular curriculum or to undertake a special project of writing and research should consult with a faculty member about taking AS.150.511 Directed Study-AS.150.512 Directed Study. An undergraduate who has the proper background may enroll in a graduate seminar if the instructor approves.

**Learning Goals**

A student who graduates with a BA in philosophy will be able to demonstrate:

- A broad understanding of the work of major figures in the history of philosophy, both ancient (especially Plato and Aristotle) and modern (especially the period of Descartes through Kant)
- Familiarity with the most important topics in a range of areas that are typically regarded as lying at the center of contemporary philosophical thought, including metaphysics, theory of knowledge, philosophy of mind, and philosophy of language
- Familiarity with the most important topics in ethics and political philosophy
- Familiarity with formal logic, including the ability to understand the logical symbolism used in many contemporary philosophical texts
- The capacity to think analytically and creatively about philosophical texts and issues
- The capacity to express philosophical ideas and support them effectively in argument, both in writing and orally.

**Requirements for the B.A. Degree**

(Also see Requirements for a Bachelor's Degree (p. 7).)

Philosophy majors must take 11 departmental courses. A minimum of six courses must be at the 300 level or higher. Of the two general introductory courses, 150.111 Philosophic Classics and 150.112 Philosophic Problems, only one may count toward the major, and two total 100-level courses may count toward the major. Majors are required to take the Undergraduate Seminar, preferably in the junior year. Courses in which a grade of D is received may not count toward the major, nor may courses taken satisfactory/unsatisfactory.

Other courses must be distributed by taking at least one course in each of the five following categories:

- Ancient philosophy
• Modern philosophy
• Logic, philosophy of science, or philosophy of mathematics
• Philosophy of mind, theory of knowledge, philosophy of language, or metaphysics
• Ethics, aesthetics, or political philosophy

The first two categories are normally satisfied by taking AS.150.201 Introduction To Greek Philosophy and AS.150.205 Introduction to the History of Modern Philosophy. The student thus has four or five additional electives after satisfying the distribution requirements.

Well-qualified majors may be admitted to a graduate seminar during their senior year. They should consult their major adviser.

If you have any questions or concerns regarding these requirements, please contact the director of undergraduate studies.

**Major Requirements**

**Major Requirements**

One course in ancient philosophy (PHIL-ANCIEN) 3
One course in modern philosophy (PHIL-MODERN) 3
One course in logic, philosophy of science, or philosophy of mathematics (PHIL-LOGSCI) 3
One course in philosophy of mind, theory of knowledge, philosophy of language, or metaphysics (PHIL-MIND) 3
One course in ethics, aesthetics, or political philosophy (PHIL-ETHICS) 3
One undergraduate seminar (300-level; ideally in junior year) 3
Five additional courses 15

**Total Credits** 33

**Sample Program of Study**

**Freshman**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.1xx-2xx elective</td>
<td>3 Course in Modern Philosophy AS.150.2xx-4xx</td>
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</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>Course in Ancient Philosophy AS.150.2xx-4xx</td>
<td>3 AS.150.3xx-4xx elective</td>
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</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.3xx (Undergraduate Seminar)</td>
<td>3 Course in Ethics AS.150.2xx-4xx</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.3xx-4xx elective</td>
<td>3 Course in Phil of Mind AS.150.2xx-4xx</td>
<td>3</td>
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</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course in Logic AS.150.2xx-4xx</td>
<td>3 AS.150.3xx-4xx elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Examples of Courses in Each Required Area**

**Ancient Philosophy**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.201</td>
<td>Introduction To Greek Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.401</td>
<td>Greek Philosophy. Plato and His Predecessors</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.402</td>
<td>Aristotle</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.403</td>
<td>Hellenistic Philosophy</td>
<td>3</td>
</tr>
</tbody>
</table>

**Modern Philosophy**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.205</td>
<td>Introduction to the History of Modern Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.412</td>
<td>Kant’s Critique of Practical Reason</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.417</td>
<td>Kant’s ‘Critique Of Pure Reason’</td>
<td>3</td>
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</tbody>
</table>

**Logic, Philosophy of Science, or Philosophy of Mathematics**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.419</td>
<td>Kant’s Critique/Judgment</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.118</td>
<td>Introduction to Formal Logic</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.420</td>
<td>Mathematical Logic I</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.421</td>
<td>Mathematical Logic II</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.422</td>
<td>Axiomatic Set Theory</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.429</td>
<td>Topics in Logic: Ontology and Knowledge Representation</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.433</td>
<td>Philosophy of Space &amp; Time</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.434</td>
<td>Formal Methods of Philosophy</td>
<td>3</td>
</tr>
</tbody>
</table>

**Philosophy of Mind, Theory of Knowledge, Philosophy of Language, or Metaphysics**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.245</td>
<td>Introduction to Philosophy of Mind</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.476</td>
<td>Philosophy and Cognitive Science</td>
<td>3</td>
</tr>
</tbody>
</table>

**Ethics, Aesthetics, or Political Philosophy**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.219</td>
<td>Introduction to Bioethics</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.220</td>
<td>Introduction to Moral Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.240</td>
<td>Intro-Political Philosop</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.452</td>
<td>Freedom of Will &amp; Moral Responsibility</td>
<td>3</td>
</tr>
</tbody>
</table>

**Double Majors**

The department encourages linking the study of philosophy with the study of other disciplines. For example, the subject matter and course requirements of the philosophy and psychology departments are such as to make a double major both practical and intriguing. Similarly, knowledge of literature or the history of art is pertinent to the study of aesthetics; a solid understanding of science is valuable for those interested in the philosophy of science; and students of ethics benefit considerably by combining their work with study of political theory and of the political realities in which morality must function. Members of the department are available to assist students in planning double majors tailored to their interests.

**Honors Program in Philosophy**

Students with an overall GPA of 3.0 and a Philosophy GPA of 3.5 or higher (or outstanding recommendations from three department members) are eligible for the Senior Honors Thesis Program. In addition to the 11 courses required for the major, successful applicants take AS.150.551 Honors Project and AS.150.552 Honors Project, to write a thesis of about 50 pages under the supervision of a faculty member. The thesis...
must be completed prior to spring vacation of senior year. If the student withdraws prior to completion of a thesis, a satisfactory/unsatisfactory grade will be awarded.

The grade for the thesis will depend on the thesis itself and an oral examination about it, conducted by the thesis adviser and two other faculty members. Graduation Honors will be awarded to those whose work receives an A- or better. For more information about the Honors Program, contact the department's director of undergraduate studies.

**Honors Thesis Program**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.150.551</td>
<td>Honors Project</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.552</td>
<td>Honors Project</td>
<td>3</td>
</tr>
</tbody>
</table>

**Minor in Philosophy**

Philosophy minors must take seven departmental courses, which should include the following:

- At least one course in the history of philosophy, either ancient or modern.
- At least one course in two of the following areas:
  - Logic, philosophy of science, or philosophy of mathematics
  - Ethics, aesthetics, or political philosophy
  - Philosophy of mind, theory of knowledge, philosophy of language, or metaphysics

**Minor Restrictions**

- Either AS.150.111 Philosophic Classics or AS.150.112 Philosophical Problems, but not both, may count as one of the seven courses. Neither is a required course.

If you have any questions or concerns regarding these updated requirements, please contact the director of undergraduate studies.

**Minor Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>One course in history of philosophy (ancient or modern)</td>
<td>3</td>
</tr>
<tr>
<td>Two courses, each from a different focal area</td>
<td>6</td>
</tr>
<tr>
<td>Four additional courses</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

**Minor in Bioethics**

The practice of medicine, the development of public health policies, and advances in the biomedical sciences raise fundamental moral and philosophical issues. The bioethics program is designed to provide students with an understanding of these issues, and the background and the conceptual tools to think about them clearly. The program is a collaboration between the Berman Institute of Bioethics and the Department of Philosophy, and draws on the resources of both.

See Bioethics Program (http://e-catalog.jhu.edu/departments-program-requirements-and-courses/arts-sciences/bioethics) for more details.

**BA/MA Program**

The department now offers an accelerated BA/MA program. The requirements for the BA and for the MA remain unchanged, but in the combined BA/MA program, two 400-level courses taken as part of the BA can also be used toward the MA. This means that the MA requires only eight additional courses, rather than the 10 required for a free-standing MA. See the Graduate tab for more information.

**Graduate Programs**

When The Johns Hopkins University was founded in 1876, it was the first university in the United States designed as a center for research and doctoral education. Among its earliest graduate students were Josiah Royce and John Dewey; C. S. Peirce was an early faculty member. The Department of Philosophy continues this tradition today, preparing graduate students to make original contributions to the field and to pursue careers in college and university teaching.

Usually there are about 15 graduate students taking courses and seminars, and another 15 at various stages in the writing of their dissertations. Because classes are small, we look for students who wish to take advantage of the individual attention available here. The department’s purpose is to provide opportunities for students to develop special interests within a program that also ensures breadth of knowledge. We offer classes, seminars, and directed study in the history of ancient, modern, and contemporary Western philosophy, and in the systematic areas of epistemology, metaphysics, ethics, philosophy of science, philosophy of physics, philosophy of language, philosophy of mind, philosophy of mathematics, mathematical logic, and aesthetics. Courses with relevance to philosophy are frequently offered in other departments, and in certain circumstances these may be used toward the PhD or MA course requirements in philosophy.

The graduate program is designed primarily for those seeking the PhD, but under exceptional circumstances students aiming at the MA may be admitted.

**Graduate Requirements**

Graduate students are required to take 13 courses, some of which must be selected to meet the departmental distribution requirements. Students also take an examination in a field of special interest to them. During the third year, students work intensively on a substantial paper on a topic in that field. After satisfying these requirements and writing a dissertation prospectus, students concentrate on the doctoral dissertation.

Students are expected to complete examinations and course work within three years. Most students take about two to three years to write their doctoral dissertation.

For complete details of PhD and MA requirements, advising, student evaluation, and other matters relating to the graduate program, view the following:


Philosophy Graduate Program Requirements (http://philosophy.jhu.edu/wp-content/uploads/sites/7/2013/01/Philosophy-Graduate-Program-Requirements-Revised.pdf) (students entering before 2015).

**BA/MA Program**

The department now offers an accelerated BA/MA program. The requirements for the BA and for the MA remain unchanged, but in the combined BA/MA program, two 400-level courses taken as part of the BA can also be used toward the MA. This means that the MA requires only eight additional courses, rather than the 10 required for a free-standing MA. For full details of the MA program and the BA/MA program, see the Requirements handbook (2015 and after) in the Graduate section here and on the department website.
In order to be admitted to the BA/MA program, you must already be a philosophy major; you can apply in the spring term of your junior year or any time in your senior year. If you meet the qualification for the BA honors thesis (overall GPA of 3.0, philosophy GPA of 3.5), you will automatically be admitted; others may be admitted on a case-by-case basis. Interested students should contact the chair of the department, Professor Richard Bett (http://philosophy.jhu.edu/directory/richard-bett).

Please note that there is no departmental financial aid for BA/MA students. However, BA/MA students whose MA-level studies extend into a fifth year get a 50% discount on their tuition in their fifth year.

All application material and supporting documents should be uploaded through the online application; these include:

- Online application (https://grad.jhu.edu/apply)—be sure to select Combined Graduate Student option
- Transcripts: unofficial transcripts must be uploaded through the online application.

**PhD Admissions**

While an undergraduate major in philosophy is good preparation for graduate study in the department, applications are welcomed from students with other majors whose interests are now turning toward philosophy.

To apply, please read the information below and on the Graduate Admissions website (http://www.grad.jhu.edu/admissions/apply), and complete the application online.

If applying to more than one department, please send complete application materials for each department. All application documents must be provided in English (either the original or translations of the original documents). If you are unable to secure translations to English, we recommend that you contact World Education Services (http://www.wes.org).

All application materials and supporting documents should be uploaded through the online application; these include:

- Online application (https://grad.jhu.edu/apply)
- Application fee
- Statement of Purpose (briefly state your area of interest at the beginning of your Statement of Purpose; upload through the online application)
- Letters of recommendation (at least two): Letters of recommendation should be submitted and uploaded electronically following the instructions in the online application.
- Transcripts: Unofficial transcripts must be uploaded through the online application. Applications will be ready for review with unofficial transcripts, but official transcripts will be required if an offer of admission is made
- GRE scores (mandatory)
- TOEFL or IELTS score (for international applicants)
- Sample of work (the sample should reflect the applicant’s area of interest, and generally does not have to be more than 20 pages in length).

**Application Deadline**

The deadline for applications is January 15 or, if January 15 falls on a weekend or a holiday, the next business day. Admissions decisions will be made by around March 15.

For questions or inquiries about the online application and supporting documents, contact the Graduate Admissions office using the online contact form (https://grad.jhu.edu/contact). You may also contact Veronica Feldkircher-Reed, the academic program coordinator for the philosophy department, at vfeldki1@jhu.edu or 410-516-7524.

**Financial Aid**

All students admitted to the program receive financial assistance. Support is guaranteed for five years, provided that a student continues to make satisfactory progress toward completion of the PhD. Department fellowships cover tuition and pay a stipend. Outstanding applicants may be nominated for a George Owen Fellowship, which also covers tuition and for which the stipend is higher. All students receive fellowship support for the first two years; no teaching is required.

Third, fourth, and fifth-year students are supported by teaching assistantships, which carry full tuition and a stipend. In practice, the department is often able to offer teaching assistantships to students beyond their fifth year, though this support is not guaranteed.

**Sachs Fellowship Fund**

A generous bequest by a former member of the department, David Sachs, has established the Sachs Fellowship Fund. Sachs Fellowships are dissertation-year fellowships awarded to students who are making substantial progress toward completing their dissertations. For more information, see the Philosophy Graduate Program Requirements (http://philosophy.jhu.edu/wp-content/uploads/sites/7/2013/01/Philosophy-Graduate-Program-Requirements-Revised.pdf) (Attachments 4 and 5).

**Graduate Student Travel Funding**

The department encourages graduate students to present their work at conferences and workshops, and it is committed to helping to make this possible by providing funds for travel and/or accommodation to students whose papers are accepted for presentation. Funding for students to participate in special summer schools is also a possibility; however, in such cases the topic must be clearly related to the student’s actual or intended area of specialization.

The funds available to the department for these purposes are limited, and so some guidelines are necessary in order to ensure that the money is distributed in the most equitable and effective way possible. With this in mind, the following guidelines are in now in place:

- For any student who makes one request for funding in a given academic year, the department will do its best to provide funding. If a student requests funding for more than one event in a given academic year, the second request will have lower priority. Similarly, a student who has had numerous trips funded over several years may find further requests given lower priority.
- The amount provided may vary depending on the cost of the trip. However, more expensive trips are more likely to receive only partial funding than less expensive ones. In particular, those involving international travel may receive only partial funding.
- The significance and prestige of the conference, workshop, or summer school in which a student is to participate will be a factor in decisions as to whether, or to what extent, to provide funding.
- A student’s proximity to the job market may result in a funding request being given higher priority than it would otherwise.
Since conferences and workshops can happen at any time of year, it is not practical to impose any specific deadlines for funding requests. The department will, however, ensure that some funds remain available throughout the year, so that students making requests late in a given year do not lose out simply because of the timing. (This means that students making requests early in the year may sometimes receive less than they have asked for.)

These guidelines may sometimes be in tension with one another. But these will be the major factors to be taken into account in making these decisions.

Students requesting funding should supply documentation concerning the event—a link to a website will often be sufficient—as well as a breakdown of the expected costs of attending. Requests should be sent to the department chair and the director of graduate study.

**William Miller Essay Prize**

The Miller Prize is an essay prize awarded for an essay submitted by an eligible student in the philosophy graduate program. A prize competition is held every year. It is not guaranteed that an award will be made every year; however, provided at least one essay submitted in a given year is judged to be of superior quality, the prize will go to the author of the best essay submitted in that year. Given essays of sufficiently high quality, it is also possible that more than one award could be made in the same year.

**Miller Prize Submission Guidelines**

Entrants must be registered graduate students in philosophy at Johns Hopkins University who are prior to the completion of their eighth semester in the program (i.e., anyone in their first four years). Submissions should be self-contained essays of no more than 10,000 words, not including footnotes. Students may submit at most one essay per year. Papers accepted for publication are not appropriate submissions.

Submissions should be anonymous; your name should not appear anywhere in the paper. The papers should be submitted to Veronica Feldkircher-Reed, either electronically (via email at vfeldki1@jhu.edu) or as a hard copy. If you do the latter, you should include a separate cover page with your name, the title of the paper, and a word count. If you submit it electronically, do not include a cover page, but include the paper title and word count in the email to which you attach the paper. The cover pages or emails will be kept separately in the office and will not be shown to the selection committee.

The submission deadline for the Miller Prize is the same day the third-year papers are due.

For current faculty and contact information go to http://philosophy.jhu.edu/people/

**Faculty**

**Chair**

Richard Bett
Professor (Chair): ancient Greek philosophy, ethics.

**Professors**

Peter Achinstein
philosophy of science, analytic philosophy.

Eckart Förster
metaphysics, history of philosophy, Kant and German idealism.

Robert Rynasiewicz

logic, philosophy of science, history and philosophy of physics.

Michael Williams
Krieger-Eisenhower Professor: theory of knowledge, philosophy of language, history of modern philosophy, epistemology.

**Associate Professors**

Hilary Bok
Henry R. Luce Professor in Bioethics and Moral and Political Theory: moral philosophy, bioethics, freedom of the will Kant.

Steven Gross
philosophy of language, philosophy of mind, metaphysics.

Chris Lebron
political philosophy focusing on issues of social justice and race

Yitzhak Melamed
Early Modern Philosophy, German idealism, metaphysics.

Dean Moyar
German idealism, social and political philosophy, ethics.

**Assistant Professors**

Justin Bledin
logic, epistemology, philosophy of language.

Elanor Taylor
metaphysics, philosophy of science, and philosophy of mind; she also works on the metaphysical side of philosophy of gender

**Emeriti**

Stephen Barker

Jerome B. Schneewind

Meredith Williams

**Joint/Adjunct Appointments**

Jeffrey Bub
Professor (Philosophy, University of Maryland, College Park): philosophy of quantum mechanics.

Jeffrey Kahn
Professor (Bloomberg School of Public Health)

Paola Marrati
Professor (Humanities Center): contemporary French thought.

Maria Merritt
Assistant Professor (Bloomberg School of Public Health): bioethics.

Govind Persad
Assistant Professor (Bloomberg School of Public Health)

Lawrence Principe
Professor (History of Science and Technology): history and philosophy of science.

Andrew Siegel
Core Faculty (Berman Institute of Bioethics).

Hent de Vries
Professor (Humanities Center): modern European thought.
Courses

AS.150.100. Philosophy of Sport. 3.0 Credits.
This course introduces students to philosophical methods by bringing them to bear on the topic of sports and games. We will explore questions about what it is for a certain practice to be a game or a sport (the metaphysics of sport) as well as questions about fair play, performance enhancement, gender equity, and commercialism and corruption in sports (the ethics of sports).
Instructor(s): T. Wilk
Area: Humanities
Writing Intensive.

AS.150.111. Philosopher's Classics. 3.0 Credits.
The course introduces students to philosophy by critically examining selected texts in the Western philosophical tradition. Philosophers whose ideas will be examined include Plato, Descartes, Kant and Nietzsche.
Instructor(s): A. Abazari
Area: Humanities
Writing Intensive.

AS.150.112. Philosophical Problems. 3.0 Credits.
An introduction to philosophy through several central problems. This year’s topics are free will, death, time, and race.
Instructor(s): S. Gross
Area: Humanities.

AS.150.113. Freshman Seminar: Objectivity. 3.0 Credits.
This course examines the notion of objectivity and challenges to it. Its topics include the status of objective facts and beliefs, the structure of social reality, and rational disagreement. Dean’s Prize Freshman Seminar
Instructor(s): N. Goldberg
Area: Humanities.

AS.150.114. Philosophy of Human Rights. 3.0 Credits.
From domestic debates about abortion and health care to international dialogue about women’s rights, genital mutilation and genocide, human rights claims have become increasingly common, and we’ve come to rely on the discourse of human rights to assess the way human beings are treated by one another and by states. But what are human rights? How are human rights claims justified? Are human rights really objective and universal or are they contingent and relative to particular cultures? Where did the human rights culture begin, and how has it become so important? This course aims to explore these questions by examining foundational human rights documents, historical works on human rights and contemporary philosophical inquiry into their foundations (or lack thereof).
Instructor(s): T. Wilk
Area: Humanities.

AS.150.116. Mortal Questions. 3.0 Credits.
What is the meaning of life? Is the question well-formed? What does living well require? Does death give human life meaning? What does it mean to say that life is ‘absurd’? Are we free to do as we choose? What should we make of human nature or the human condition in light of the great and ever more pervasive technological advances of the present epoch? Will we transform our nature? In light of threats of environmental catastrophes spurred by global warming, nuclear war and the like, what do we make of our daily lives and the activities that compose them? Do those equipped with the relevant capacities and apprised of the relevant information bear a moral obligation to the communities of which they are members? Crucially, these questions require us to reflect deeply on our human values. To address these questions, we will read selected works of philosophers ranging in time from Plato to the present – including both analytic and continental philosophers, men and women, the canonized and otherwise.
Instructor(s): D. Lindeman
Area: Humanities
Writing Intensive.

AS.150.118. Introduction to Formal Logic. 3.0 Credits.
An introduction to symbolic logic and probability. In the first two parts of the course we study formal ways of determining whether a conclusion follows from its premises. Included are truth-functional logic and predicate logic. In the third part we study the basic rules of probability, and learn how to make probability calculations and decisions in life. Co-listed with AS.150.632 (for graduate students) (01-F 11:00-11:50am).
Instructor(s): P. Achinstein
Area: Humanities, Quantitative and Mathematical Sciences.

AS.150.122. Mortal Questions. 3.0 Credits.
What is the meaning of life? Is the question well-formed? What does living well require? Does death give human life meaning? What does it mean to say that life is ‘absurd’? What is free will, and do we have it? What should we make of human nature or the human condition in light of the great and ever more pervasive technological advances of the present epoch? Will we transform our nature? In light of threats of environmental catastrophes spurred by global warming, nuclear war and the like, what do we make of our daily lives and the activities that compose them? Are we living as we ought to? Crucially, these questions and others like them require us to reflect deeply on our human values. To address these questions, we will read selected works of philosophers ranging in time from Plato to the present.
Instructor(s): D. Lindeman
Area: Humanities.

AS.150.129. The Theory of Knowledge: Classic and Contemporary Questions. 3.0 Credits.
What is knowledge and how to define it? Does knowing require an ability to produce supporting reasons or is it sufficient that our beliefs track the truth? Which general model better its structure, Foundationalism, Coherentism or Infinitism? Does knowing depend on context? Can we discover empirically what knowledge is? These are key questions we will be discussing in our seminar, inspired by reading texts ranging from classics like Plato, the Stoics, and Sextus Empiricus, to contemporary authors like Gettier, Davidson, Goldman, DeRose, and others. Dean’s Prize Freshman Seminar.
Instructor(s): P. Stojanovic
Area: Humanities.
AS.150.134. Freshman Seminar: Socrates in Context. 3.0 Credits.
A study of Socrates as portrayed by his contemporaries, and of intellectual and political trends to which he may have been reacting. Authors will include Plato, Xenophon and Aristophanes. Freshmen Only.
Instructor(s): R. Bett
Area: Humanities.

AS.150.135. Freshman Seminar: The Philosophy of Race and Racism. 3.0 Credits.
The twin specters of race and racism have perennially dominated nearly every aspect of American social, economic, and political life. In this course, we will try to appreciate the nature and scope of this dominance by addressing fundamental questions about the natures, functions, and manifestations of race and racism in contemporary American life. Topics include: the “metaphysics” of race, conditions of racial membership, the moral harms induced by racism, the psychology of racial bias, and institutional forms of racism.
Instructor(s): P. O’Donnell
Area: Humanities, Social and Behavioral Sciences.

AS.150.136. Philosophy & Science: An Introduction to Both. 3.0 Credits.
Philosophers and scientists raise important questions about the nature of the physical world, the mental world, the relationship between them, and the right methods to use in their investigations of these worlds. The answers they present are very different. Scientists are usually empiricists, and want to answer questions by experiment and observation. Philosophers don’t want to do this, but defend their views a priori. Why? Can both be right? Readings will present philosophical and scientific views about the world and our knowledge of it. They will include selections from major historical and contemporary figures in philosophy and science. This course has no prerequisites in philosophy or science.
Instructor(s): P. Achinstein
Area: Humanities, Natural Sciences.

AS.150.137. Philosophy of Language Seminar: Proper Names and Definite Descriptions. 3.0 Credits.
In talking with each other, we often use proper names like ‘Juliet’ and definite descriptions like ‘The most beautiful fresco in Italy’ to pick out persons and objects in our world. But what do these expressions mean exactly? In this seminar, we’ll slowly and carefully work through some classic philosophical texts that address this issue. These texts will provide an introduction to the philosophy of language, and to analytic philosophy in general.
Instructor(s): J. Bledin
Area: Humanities
Writing Intensive.

AS.150.140. Minds, Bodies, and Persons. 3.0 Credits.
This course is a philosophical exploration of the mind and its relation to the body, personhood, and artificial intelligence. First, we will consider competing definitions of the mind and how it fits into the world. From here, we will engage with the concept of human personhood through an examination of what it takes to remain the same person over time. We will also be considering whether machines could ever have minds in the same way that human persons do, as well as the metaphysical and practical implications of mind uploading. Through testing the boundaries of cognition and personhood through technology, we hope to bring the relationship between minds, bodies, and persons into clearer focus.
Instructor(s): K. Brophy
Area: Humanities.

AS.150.141. Freshman Seminar. 3.0 Credits.
The class takes a problem-oriented approach to select dialogues in Plato. Central questions will include: the nature of motivation, and in particular, whether it is true that everyone desires the good; and the role of knowledge in leading a good life, in particular, whether it is true that that virtue is knowledge. We will focus on Ion, Apology, Euthyphro, the Meno, and the ethical books of the Republic.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.147. Freshman Seminar: The Virtue Ethics Tradition. 3.0 Credits.
In this seminar we explore the virtue ethics tradition and its pursuit to figure out what it means to be a good person. We creatively read the classical tradition as well as less familiar texts in race & gender studies as well as fiction.
Instructor(s): C. Lebron
Area: Humanities
Writing Intensive.

AS.150.154. Freshman Seminar. 3.0 Credits.
The class takes a problem-oriented approach to select dialogues in Plato. Central questions will include: the nature of motivation, and in particular, whether it is true that everyone desires the good; and the role of knowledge in leading a good life, in particular, whether it is true that that virtue is knowledge. We will focus on Ion, Apology, Euthyphro, the Meno, and the ethical books of the Republic.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.156. Freshman Seminar. 3.0 Credits.
The class takes a problem-oriented approach to select dialogues in Plato. Central questions will include: the nature of motivation, and in particular, whether it is true that everyone desires the good; and the role of knowledge in leading a good life, in particular, whether it is true that that virtue is knowledge. We will focus on Ion, Apology, Euthyphro, the Meno, and the ethical books of the Republic.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.159. Freshman Seminar. 3.0 Credits.
The class takes a problem-oriented approach to select dialogues in Plato. Central questions will include: the nature of motivation, and in particular, whether it is true that everyone desires the good; and the role of knowledge in leading a good life, in particular, whether it is true that that virtue is knowledge. We will focus on Ion, Apology, Euthyphro, the Meno, and the ethical books of the Republic.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.165. Freshman Seminar. 3.0 Credits.
The class takes a problem-oriented approach to select dialogues in Plato. Central questions will include: the nature of motivation, and in particular, whether it is true that everyone desires the good; and the role of knowledge in leading a good life, in particular, whether it is true that that virtue is knowledge. We will focus on Ion, Apology, Euthyphro, the Meno, and the ethical books of the Republic.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.171. Freshman Seminar. 3.0 Credits.
The class takes a problem-oriented approach to select dialogues in Plato. Central questions will include: the nature of motivation, and in particular, whether it is true that everyone desires the good; and the role of knowledge in leading a good life, in particular, whether it is true that that virtue is knowledge. We will focus on Ion, Apology, Euthyphro, the Meno, and the ethical books of the Republic.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.174. Freshman Seminar. 3.0 Credits.
The class takes a problem-oriented approach to select dialogues in Plato. Central questions will include: the nature of motivation, and in particular, whether it is true that everyone desires the good; and the role of knowledge in leading a good life, in particular, whether it is true that that virtue is knowledge. We will focus on Ion, Apology, Euthyphro, the Meno, and the ethical books of the Republic.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.182. What is Science?. 3.0 Credits.
A philosophical introduction to very basic questions about scientific reasoning, its scope and limits. Is there a universal scientific method? Can science really explain everything, anything? Must everything be proved in science? Is science incompatible with religion? Readings will be from scientists and philosophers who have thought about these issues from Descartes and Newton to the present. No prerequisites either in philosophy or science.
Instructor(s): P. Achinstein
Area: Humanities, Natural Sciences.
Instructor(s): N. Andonovski

question: is the human mind itself a machine?

think and whether we can build robots that have emotions, personalities intelligence. We will examine such questions as whether machines can

The course is a philosophical introduction to the topic of artificial

AS.150.216. Minds and Machines. 3.0 Credits.

What is the responsibility of artificial intelligence? We will examine questions such as whether machines can think and whether we can build robots that have emotions, personalities and a sense of self. In doing so, we will touch upon a closely connected question: is the human mind itself a machine?

Instructor(s): N. Andonovski
Area: Humanities, Natural Sciences.
AS.150.238. Philosophy, Science Fiction, and Human Nature. 3.0 Credits.  
This is an introduction to philosophy through themes in science fiction. Particular emphasis will be on philosophical questions related to what it means to be a human such as personal identity, free will, the nature of mind, and the nature of knowledge.  
Instructor(s): J. Simpson  
Area: Humanities  
Writing Intensive.  

AS.150.240. Intro-Political Philosoph. 3.0 Credits.  
Instructor(s): C. Lebron  
Area: Humanities  
Writing Intensive.  

AS.150.245. Introduction to Philosophy of Mind. 3.0 Credits.  
This is an introduction to the central problems of philosophy of mind: the mind-body problem and the problem of self-knowledge. Of particular interest in contemporary work is the relation of mind and brain and whether, or how, we acquire self-knowledge.  
Instructor(s): E. Taylor  
Area: Humanities.  

AS.150.248. Introduction to Metaphysics. 3.0 Credits.  
The class is an introduction to contemporary, analytic, metaphysics. Topics to be discussed include: what is metaphysics, the nature of existence, time and temporality, modality and possible worlds, identity and personal identity, persistence, mereology, causation, and universals and abstract entities.  
Instructor(s): Y. Melamed  
Area: Humanities.  

AS.150.253. Introduction to Philosophy of Psychology. 3.0 Credits.  
Psychology is the study of mind and behavior, and philosophy of psychology is the study of the foundations of psychology. Foundational issues in psychology addressed by philosophy of psychology come in the form of the following questions. What is the nature of mental representation? What is the basic architecture of the mind, and is it innate? Can psychological theories proceed in abstraction from the environment? The purpose of this course is to introduce students to these and related questions and the various answers they’ve been given.  
Instructor(s): D. Lindeman  
Area: Social and Behavioral Sciences.  

AS.150.254. Philosophy and Memory. 3.0 Credits.  
This course is designed as a survey of the major philosophical questions about memory, with a particular emphasis on the way in which these questions are affected by recent empirical evidence from psychology and the neurosciences. The course is divided into four main parts, exploring the topics of concern: 1. Memory and Representation 2. Memory and Reconstruction 3. Memory, Time and Personal Identity 4. Memory, Ethics and Politics In addressing these questions, we will read some of the major philosophical works concerning memory published in the last 100 years, but we will also investigate the emerging theoretical and experimental paradigms coming from psychology and the neurosciences.  
Instructor(s): N. Andonovski  
Area: Humanities, Social and Behavioral Sciences.  

AS.150.256. Is There Progress in Science?. 3.0 Credits.  
In this class we will consider the problems related to the progress of science. First, we will discuss the problem of theory change: is there a way to compare different scientific paradigms and to assess their progressiveness? Next, we will deal with a more specific question: does history of science provide evidence that our best current theories are approximately true? Indeed, are we even justified in thinking that our scientific theories gradually approach truth?  
Instructor(s): A. Kabeshkin.  

AS.150.259. Introduction to the Theory of Knowledge. 3.0 Credits.  
An introduction to the central problems, concepts and theories of philosophical epistemology (theory of knowledge). Topics to be explored will include: what is knowledge (and why do we want it)? Can we get it (skeptics answer “No”), or is everything in the end a matter of opinion? (skeptics say “Yes!”)? Theories of knowledge and justification: foundationalism versus the coherence theory; externalism versus internalism in epistemology. To what extent is knowledge an appropriate object of theory? Readings from early 20th century through contemporary sources.  
Instructor(s): M. Williams  
Area: Humanities.  

AS.150.260. Introduction to Metaphysics. 3.0 Credits.  
Metaphysics addresses fundamental questions about the nature and structure of reality. This course will offer an introduction to metaphysics, and a survey of metaphysical debates about topics including time, causation, personal identity, God and free will.  
Instructor(s): E. Taylor  
Area: Humanities.  

AS.150.269. Freshman Seminar: Philosophy of Human Rights. 3.0 Credits.  
This course introduces students to the methods of philosophical inquiry and writing via an exploration of philosophical questions about the foundations of human rights, the modern human rights culture, and the relationships between human rights, civil rights, group rights, and women’s rights. No background in philosophy will be assumed, as the aim of the course is to teach philosophical methods while examining the language and practice of human rights, which have been central to the post-WWII global order.  
Instructor(s): T. Wilk  
Area: Humanities  
Writing Intensive.  

AS.150.300. Prometheus Editorial Workshop. 1.0 Credit.  
Prometheus is an international undergraduate philosophy journal published by students at Johns Hopkins University. The purpose of the journal is to promote philosophic discourse of the highest standard by offering students an opportunity to engage in open discussion, participate in the production and publication of an academic journal, and establish a community of aspiring philosophers. Students enrolled in this workshop will act as the staff readers for the journal. For more information, please visit www.prometheus-journal.com. Prerequisite: MUST have taken one philosophy course.  
Instructor(s): C. Cummings  
Area: Humanities.  

AS.150.301. Majors Seminar: Ancient Greek Ethics. 3.0 Credits.  
Required for philosophy majors and restricted to philosophy majors and minors. The course this year will focus on ancient Greek ethics, including selections from Plato, Aristotle, the Stoics, the Epicureans, the Skeptics, and perhaps others.  
Instructor(s): R. Bett  
Area: Humanities.
AS.150.304. The Ethics of Human Experimentation. 3.0 Credits.
This course will explore ethical theory, key historical events, and operational requirements of research involving human beings. Weekly discussions will focus on seminal literature and case studies that highlight conceptual and practical challenges related to informed consent; research ethics review; risk/benefit analysis; justice/fairness; globalization of research; participation of vulnerable populations; clinical equipoise; obligations to research participants and communities during studies and after research is completed; and deception in psychological and behavioral research. The course will also explore the emergence and development of the rules governing the protection of human subject research.
Instructor(s): J. Ali
Area: Humanities.

AS.150.309. Introduction to Philosophy of Physics. 3.0 Credits.
This course starts on July 7th and runs until August 1st. This course aims at introducing the student to the basic philosophical issues that lie at the heart of the modern physicist’s conception of nature. To this end, we will look carefully at the foundations of two modern theories of physics, namely, the special theory of relativity and quantum theory. Relativity revolutionized our understanding of space and time, whereas quantum physics shattered our established beliefs about causality and determinism in nature. In the special relativity section of this class, we will cover topics such as the speed of light postulate, conventionality of simultaneity thesis, and the twin paradox. In the foundations of quantum physics, we will probe the measurement problem, Schrodinger’s cat paradox and the uncertainty principle. No previous background in physics is required.
Instructor(s): G. Guralp
Area: Humanities, Natural Sciences.

AS.150.315. Philosophy of Human Rights. 3.0 Credits.
From domestic debates about abortion and health care to international dialogue about women’s rights, genital mutilation and genocide human rights claims have become increasingly common, and we’ve come to rely on the discourse of human rights to assess the way human beings are treated by one another and by states. But what are human rights? How are human rights claims justified? Are human rights really objective and universal or are they contingent and relative to particular cultures? Where did the human rights culture begin, and how has it become so important? This course aims to explore these questions by examining foundational human rights documents, historical works on human rights and contemporary philosophical inquiry into their foundations (or lack thereof).
Instructor(s): T. Wilk
Area: Humanities
Writing Intensive.

AS.150.316. Puzzles and Paradoxes. 3.0 Credits.
The course is a survey of puzzles and paradoxes of truth, belief, knowledge, meaning, confirmation, rational action, and vagueness. Specific puzzles and paradoxes include, among others: Russell’s paradox, the liar paradox, Moore’s paradox, the skeptical paradox, Newcomb’s paradox, and the Sorites paradox. Besides being fun to think about, these puzzles and paradoxes touch on many areas of philosophy, including philosophy of language, logic, metaphysics, and epistemology. When introducing each puzzle or paradox, attention will be paid to its history and significance. In addition to this exposure to some of the many domains of philosophy, students will gain analytical skills applicable well beyond philosophy.
Instructor(s): D. Lindeman
Area: Humanities.

AS.150.317. Undergraduate Seminar for Philosophy Majors: Can Everything Be Explained?. 3.0 Credits.
We will study various philosophical theories about the nature of explanation, reduction, and speculation.
Instructor(s): P. Achinstein
Area: Humanities.

AS.150.320. Marx: Critique of Political Economy. 3.0 Credits.
A close reading of Marx’s Capital: Volume One. Specific attention will be given to clarification of Marx’s methodology, the foundational categories of his critique of political economy, the systematic unity of his theory, and the underlying normative concepts which inform his work. No previous course in philosophy or social sciences is required.
Instructor(s): A. Abazari
Area: Humanities, Social and Behavioral Sciences.

AS.150.322. Emotion, Mind & Morality. 3.0 Credits.
In this course, we will investigate a number of important philosophical questions about the normative structure of emotions and their role in moral cognition by surveying some of the classic works in philosophy. We will also read a number of contemporary papers. Finally, we will look at recent work in psychology and cognitive neuroscience on the impact of emotion on reason.
Instructor(s): M. Bergamaschi Ganapini
Area: Humanities
Writing Intensive.

AS.150.323. Undergraduate Seminar: Topics in Meta-Ethics. 3.0 Credits.
This is a seminar on theoretical topics in ethics. We focus on debates over cognitivism and non-cognitivism; realism and anti-realism; reasons internalism and externalism; relativism and pluralism. We read contemporary classics by Sharon Street, T.M. Scanlon, Joseph Raz, Bernard Williams, Allan Gibbard, and others.
Instructor(s): L. Theunissen
Area: Humanities
Writing Intensive.

AS.150.325. Philosophy of Oppression and Resistance. 3.0 Credits.
Human social structures can be oppressive in either explicit or covert forms, even in societies highly committed to just democratic ideals. The course will investigate what it means for an individual, practice, or institution to be oppressive, and will explore the concrete mechanisms which can underlie racialized and gendered forms of oppression in particular. Special attention will be given to the political and moral problems raised by hate speech, pornography, propaganda, ideology, and material inequality. Finally, we will discuss how social agents can resist explicit and covert oppression in a way that is conducive to the realization of just ideals.
Instructor(s): K. Powell
Area: Humanities
Writing Intensive.

AS.150.326. Philosophy of Art: A Historical Introduction. 3.0 Credits.
A reading of a number of important texts from the history of philosophy dealing with topics in the philosophy of art. Particular attention will be given to the German aesthetic tradition, and especially to Hegel’s aesthetics, although the most important ancient Greek contributions will be considered as well. In particular, we will read Plato, Aristotle, Plotinus, Kant, Schiller, early German Romantics, and Hegel, as well as selected secondary literature. No previous coursework in philosophy or history of art is required.
Instructor(s): A. Kabeshkin
Area: Humanities.
AS.150.330. Decisions, Games & Social Choice. 3.0 Credits.
This course is an introduction to decision theory, game theory, and social choice theory with an emphasis on their philosophical underpinnings and philosophical applications. Topics covered include the Prisoner’s Dilemma, Newcomb’s Problem, convention and social contracts, risk, and Arrow’s Theorem.
Instructor(s): J. Bledin
Area: Humanities.

AS.150.351. The Philosophy of Race and Racism. 3.0 Credits.
The twin specters of race and racism have perenniably dominated nearly every aspect of American social, economic, and political life. In this course, we will try to appreciate the nature and scope of this dominance by addressing fundamental questions about the nature, functions, and manifestations of race and racism in contemporary American life. Topics include: the "metaphysics" of race, conditions of racial membership, the moral harms introduced by racism, the psychology of racial bias, and institutional forms of racism.
Instructor(s): D. Moyar
Area: Humanities.

AS.150.355. Philosophy of Law. 3.0 Credits.
In this course we will examine major issues in the philosophy of law, including the relation of law to moral theory, the role of the Constitution in legal decisions, and the justification of punishment. No previous knowledge of law or philosophy is required.
Instructor(s): D. Moyar
Area: Humanities, Social and Behavioral Sciences.

AS.150.401. Greek Philosophy: Plato and His Predecessors. 3.0 Credits.
A study of pre-Socratic philosophers, especially those to whom Plato reacted; also an examination of major dialogues of Plato with emphasis upon his principal theses and characteristic methods. Cross-listed with Classics.
Instructor(s): R. Bett
Area: Humanities
Writing Intensive.

AS.150.402. Aristotle. 3.0 Credits.
A study of major selected texts of Aristotle.
Instructor(s): R. Bett
Area: Humanities
Writing Intensive.

AS.150.403. Hellenistic Philosophy. 3.0 Credits.
A study of later Greek philosophy, stretching roughly from the death of Aristotle to the Roman imperial period. Epicureans, Stoics, and Skeptics will be the main philosophical schools examined.
Instructor(s): R. Bett
Area: Humanities
Writing Intensive.

AS.150.404. The Idea of Power. 3.0 Credits.
The Idea of Power surveys seminal texts in the history of political thought on the nature, promise, and dangers of political and social power; it also critically engages contemporary texts on race and gender power relations.
Instructor(s): C. Lebron
Area: Humanities.

AS.150.407. Enlightenment and Alienation. 3.0 Credits.
Why does the increase in enlightenment not correlate with an increase in morality and happiness? Jean-Jacques Rousseau raised this question in the middle of the 18th century and it remains a pressing question today. The course will examine the role of Rousseau, Hegel, Marx, and Adorno, as well as in the contemporary work of Richard Moran and Rahel Jaeggi.
Instructor(s): D. Moyar
Area: Humanities.

AS.150.408. The Ethics of Climate Change. 3.0 Credits.
In this course we consider ethical issues related to climate change and climate change policy. These include issues about how we ought to distribute the burden of mitigation and adaption, what we owe to future generations and to the non-human world, and about our responsibilities as individuals (with respect, for example, to our diets). We briefly consider geoengineering and issues related to the widespread reliance on cost-benefit analyses in climate policy.
Instructor(s): J. McBee
Area: Humanities.

AS.150.409. Wittgenstein On Certainty. 3.0 Credits.
Wittgenstein’s On Certainty consists of four notebooks containing remarks on knowledge, certainty, doubt and truth. In this course, we will undertake a close study of Wittgenstein’s notes, critically examining competing interpretations of Wittgenstein’s ideas and the different use of those ideas have been taken up in current debates about philosophical skepticism.
Instructor(s): M. Williams
Area: Humanities.

AS.150.410. The Philosophy of Afrofuturism I. 3.0 Credits.
The main goal of speculative fiction is to render a familiar world slightly unfamiliar to then ask familiar questions in new ways. Afrofuturism as a genre of sci-fi, fantasy, and horror written by and about black people, applies this ethic to the problems of race, broadly speaking. In this course we survey major texts to philosophically inquire into phenomena like incarceration, slavery and its lingering effects, and colonialism among other themes.
Instructor(s): C. Lebron
Area: Humanities

AS.150.411. Arabic-Islamic Philosophy. 3.0 Credits.
Introduction to major philosophers of the Arabic-Islamic tradition, including Avicenna, al-Ghazali, and Averroes. Topics addressed include the existence of God, metaphysics (e.g., causality), human freedom and knowledge, revelation and reason.
Instructor(s): S. Ogden
Area: Humanities.

AS.150.412. Kant’s Critique of Practical Reason. 3.0 Credits.
A historical and systematic study of Kant’s ethics and philosophy of religion, with special attention to his Critique of Practical Reason.
Instructor(s): E. Forster
Area: Humanities.

AS.150.414. Topics in Political Philosophy: Liberalism. 3.0 Credits.
This course will examine recent liberal political philosophy, with particular emphasis on the work of John Rawls and Jürgen Habermas.
Instructor(s): D. Moyar
Area: Humanities.
AS.150.415. Schelling’s System of Transcendental Idealism. 3.0 Credits.
Schelling’s System of Transcendental Idealism is one of the key texts in
the transition from Kant to Hegel. It is also one of Schelling’s clearest
and most successful publications, and one of the best introductions to
his philosophy. This course offers a close examination of the System of
Transcendental Idealism against the background of Kant and Fichte.
Instructor(s): E. Forster
Area: Humanities.

AS.150.416. Kant’s major “minor writings”. 3.0 Credits.
Some of Kant’s so-called “minor writings” are in fact brilliant essays that
represent important stages in the formation and development of his
mature, “critical” philosophy. In this course we will study ten of these
essays in detail.
Instructor(s): E. Forster
Area: Humanities.

AS.150.417. Kant’s ‘Critique Of Pure Reason’. 3.0 Credits.
An examination of the philosophy of Immanuel Kant, with emphasis on
The Critique of Pure Reason.
Instructor(s): E. Forster
Area: Humanities.

AS.150.419. Kant’s Critique/Judgment. 3.0 Credits.
This course will examine closely and in detail the aesthetic and
teleological parts of Kant’s third masterpiece, The Critique of the Power
of Judgment.
Instructor(s): E. Forster
Area: Humanities.

AS.150.420. Mathematical Logic I. 3.0 Credits.
The development, first, of sentential logic and, then, of first-order
predicate logic. Topics covered include formal languages, effective
procedures, truth-functional and Tarski semantics, logical entailment,
systems of derivation, deductive soundness and completeness,
compactness, theories, formalization of mathematics, sizes of models,
and interpretations between theories.
Instructor(s): R. Rynasiewicz
Area: Humanities, Quantitative and Mathematical Sciences.

AS.150.421. Mathematical Logic II. 3.0 Credits.
Gödel’s two incompleteness theorems regarding, first the
unaxiomatizability of arithmetic and, second, the impossibility of
proving the consistency of arithmetic using arithmetic methods (unless
arithmetic is inconsistent). Computability and Church’s Thesis.
Prerequisites: AS.150.420
Instructor(s): R. Rynasiewicz
Area: Humanities, Quantitative and Mathematical Sciences.

AS.150.422. Axiomatic Set Theory. 3.0 Credits.
A development of Zermelo-Fraenkel set theory (ZF), including the
axiom of choice (ZFC), a system in which all of mathematics can be
formulated (i.e., entails all theorems of mathematics). Although, we’ll
do an exposure to transfinite ordinals and cardinals in general so that
you can get a sense for how stupendously “large” these can be, the main
thrust concerns certain simple, seemingly well-posed conjectures whose
status appears problematic. For example, the Continuum Hypothesis
(CH) is the conjecture that the cardinality of the real numbers is the first
uncountable cardinality, i.e., the first cardinality greater than that of the
set of natural numbers. Equivalently, there is no uncountable subset of
real numbers strictly smaller in cardinality than the full set of reals. (You’d
think that if there were one, you would be able eventually to find such.)
Cantor thought that CH is true, but could not prove it. Gödel showed, at
least, that if ZFC is consistent, then so is ZFC+CH. However, Paul Cohen
later proved that if ZFC is consistent, then so is ZFC + the negation of
CH. In fact, CH could fail in astoundingly many ways. For example, the
cardinality of the continuum could be (weakly) inaccessible, i.e., of a
cardinality that cannot even be proved to exist in ZFC (although the
reals can certainly can be proved to exist in ZFC). So, are there further,
intuitively true axioms that can be added to ZFC to resolve the cardinality
of the continuum, and CH is definitely true or false? Or, as Cohen thought,
does CH simply lack a definite truth value?
Instructor(s): R. Rynasiewicz
Area: Humanities, Quantitative and Mathematical Sciences.

AS.150.425. Poetic Thought. 3.0 Credits.
This course will examine essays and poems by Goethe, Hölderlin, and
Rilke with an eye toward the ways in which their work addresses issues
central to German Idealism and modern German thought. These include
the relation of subject to object; the problem of the representation
of the whole; the reconciliation of science and art; and the role of
consciousness in the construction of the world. Readings to include texts
by Goethe, Hölderlin, and Rilke with commentary by Heidegger, Gadamer,
Henrich, Husserl, Benjamin, and Allemann. Reading knowledge of German
is required.
Instructor(s): E. Forster; R. Tobias
Area: Humanities, Natural Sciences.

AS.150.426. Philosophy and Disability. 3.0 Credits.
In this course, we will consider various philosophical issues related to
disability. What counts as a disability? What obligations do we have, both
as individuals and as a society, to people with disabilities? What counts
as respecting people with disabilities, and what counts as unjustifiable
discrimination against them?
Prerequisites: AS.150.219 OR AS.150.220
Instructor(s): H. Bok
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.150.427. Aristotelian Philosophical Psychology. 3.0 Credits.
What did philosophy of mind look like before Descartes? It centered on
study of the soul (psuche), or philosophical psychology. This course
will focus on Aristotle’s view of the soul, its functions, and its relation
to matter (hylomorphism), as well as the development of his thought
by later ancient and medieval Aristotelians, including Alexander of
Aphrodisias, Averroes, and Aquinas. Will conclude with examination of
some renewed interest in Aristotle relative to contemporary philosophy of
mind.
Instructor(s): S. Ogden
Area: Humanities.
AS.150.428. Spinoza’s Theological Political Treatise. 3.0 Credits.
The course is an in-depth study of Spinoza’s Theological-Political Treatise. Among the topics to be discussed are: Spinoza’s Bible criticism, the nature of religion, philosophy and faith, the nature of the ancient Hebrew State, Spinoza’s theory of the State, the role of religion in Spinoza’s political theory, the freedom to philosophize, the metaphysics of Spinoza’s Theological-Political Treatise, and finally, the reception of the TTP.
Instructor(s): Y. Melamed.

AS.150.429. Topics in Logic: Ontology and Knowledge Representation. 3.0 Credits.
Knowledge representation deals with the possible structures by which the content of what is known can be formally represented in such a way that queries can be posed and inferences drawn. Ontology concerns the hierarchical classification of entities from given domains of knowledge together with the relations between various classes, subclasses, or individuals. The main framework in which we will work is that of description logics, which are decidable fragments of varying degrees of first order predicate logic. In ontology development we will examine RDF (Resource Description Framework), its extension to RDFS, and OWL (Web Ontology Language), and use the software Protege for specific applications. Finally, we will take a look at query languages such as SPARQL (SPARQL Protocol and RDF Query Language).
Instructor(s): R. Rynasiewicz
Area: Humanities, Quantitative and Mathematical Sciences.

AS.150.430. Hegel’s Phenomenology of Spirit. 3.0 Credits.
An in-depth study of Hegel’s masterpiece, the Phenomenology of Spirit. We will be concentrating on the first half of the text.
Instructor(s): E. Forster.

AS.150.431. Introduction to Philosophy of Science. 3.0 Credits.
Scientific knowledge plays an important role in human understanding. What makes something scientific? For that matter, what is a scientific explanation? Philosophers have long reflected on the nature of science and the way it shapes our conception of the universe. In this course, we will explore topics at the intersection of philosophy and science, including scientific explanation, laws of nature, the problem of induction, and reductionism. This course presupposes no philosophical or scientific background.
Instructor(s): P. Achinstein; R. Bett
Area: Humanities.

AS.150.432. Hegel’s Phenomenology of Spirit, Part 2. 3.0 Credits.
This course is a continuation of Hegel’s Phenomenology of Spirit, Part One, taught last Spring. We will closely study the second half of the book, compare its methodology with that of the first half, and end with an examination of Hegel’s systematic reflections in the "Preface".
Prerequisites: AS.150.430
Instructor(s): E. Forster
Area: Humanities.

AS.150.433. Philosophy of Space & Time. 3.0 Credits.
Is space an entity that exists independently of matter, or is it only an abstraction from spatial relations between bodies? Is there a lapse of time even when nothing changes, or is time only a measure of motion? Are motion and rest contrary states of a body, or are there only changes in the positions of bodies relative to one another? Philosophers and physicists have disputed these questions from antiquity to the present day. We survey the arguments and attempt to find a resolution. But there are further questions. Is there a fact of the matter as to the geometry of space (Euclidean or non-Euclidean), or as to whether spatially separated events occur at the same time? Why does time but not space have a "direction"? Are past, present and future objective features of reality? Are space and time ultimately discrete on small scales? Do space and time, or even just spatio-temporal relations between bodies and events, really exist? Or are they merely emergent features of a fundamental non-spatio-temporal reality?
Instructor(s): R. Rynasiewicz
Area: Humanities, Natural Sciences.

AS.150.434. Formal Methods of Philosophy. 3.0 Credits.
During the last century or so, symbolic logic and other formal methods have come to play an essential role in most areas of systematic philosophical inquiry. This course serves as an introduction to these formal prerequisites for more advanced study in a wide variety of contemporary philosophical areas. Topics include the syntax and semantics of sentential and first-order predicate logic, natural deduction, basic set theory, mathematical induction and recursion, probability, modal logic, and non-standard logics. The emphasis is on basic comprehension, not on mathematical virtuosity. (Co-listed/combined with AS.150.223)
Instructor(s): R. Rynasiewicz
Area: Humanities.

AS.150.435. Maimonides’ Guide of the Perplexed & Political Theology. 3.0 Credits.
The seminar is an in-depth study of Maimonides’ magisterial work, the Guide of the Perplexed. Special attention will be given to Maimonides’ views about the political functions of religion. We will also read modern commentaries and responses to the Guide, by Leibniz, Spinoza, and Salomon Maimon.
Instructor(s): D. Katz; Y. Melamed
Area: Humanities.

AS.150.436. Philosophy of Gender. 3.0 Credits.
In this class we will examine philosophical questions about gender, and about the intersections between gender and other social categories including race, class and sexuality. We will focus specifically on questions about the metaphysics of gender and other social categories.
Instructor(s): E. Taylor
Area: Humanities.

AS.150.437. KANT’S Opus Postumum. 3.0 Credits.
Why did Kant, after he had completed the three Critiques, work on a book with the title, Transition from the Metaphysical Foundations of Natural Science to Physics — better known as his Opus postumum? Why did this project eventually come to include ethics and result in a revision of Kant’s transcendental philosophy? Questions like these will be answered by means of a close study of Kant’s text, and by relating the text to (a) his Metaphysical Foundations of Natural Science and (b) to his ethical writings from the critical period.
Instructor(s): E. Forster
Area: Humanities.
AS.150.438. Spinoza's Ethics. 3.0 Credits.
The seminar is an in depth study of Spinoza's major work, The Ethics.
Instructor(s): Y. Melamed
Area: Humanities.

AS.150.440. The Making of Black Lives Matter. 3.0 Credits.
This course explores the history of black thought that informs the ethics of the contemporary movement for black lives.
Instructor(s): C. Lebron
Area: Humanities
Writing Intensive.

AS.150.442. The Philosophy of Ludwig Wittgenstein. 3.0 Credits.
We will read Wittgenstein's two great works: Tractatus Logico-Philosophicus (1921) and Philosophical Investigations (1953). We may also devote some time to his late, unpublished work, Uncertainty.
Instructor(s): M. Williams
Area: Humanities.

AS.150.443. Wittgenstein's Philosophy of Mind. 3.0 Credits.
The seminar will begin with a careful examination of the private language argument in the Philosophical Investigations. Among the additional themes we will examine are his analogy between philosophy of mathematics and his philosophy of psychology, implicit criticisms of the representational theory of mind, the problem of other minds and the role of deception, and the "grammar" of psychological concepts. There are numerous manuscripts concerned with mental and psychological concepts. Two volumes of the Remarks on the Philosophy of Psychology will be ordered for the seminar, though we will not be "working through" them in a systematic way. The Philosophical Investigations and Zettel are essential. Recommended Course Background: Familiarity with Wittgenstein's work.
Instructor(s): M. Williams
Area: Humanities.

AS.150.444. The Identity of Indiscernibles. 3.0 Credits.
Can two things (such as bodies, events, moments, thoughts, or geometrical points) have precisely the same qualities? If so, what makes them different from each other? In this class we will explore the debate about the Principle of the Identity of Indiscernibles. Readings will include texts by Leibniz, Clarke, Max Black, Ayer, Ian Hacking, Robert Adams, and Michael Della Rocca.
Instructor(s): Y. Melamed
Area: Humanities.

AS.150.446. Hegel's Science of Logic. 3.0 Credits.
In this course we will focus on the first two parts of Hegel's Science of Logic, and address the following issues (among others). In what sense is Hegel's dialectical logic continuous with the classical metaphysical tradition and in what sense is it a critique of traditional metaphysics? What motivates the project, or what questions does Hegel think his logic can answer that previous logics did not?
Instructor(s): D. Moyar; E. Forster
Area: Humanities.

AS.150.447. The Logic of Spinoza's Ethics. 3.0 Credits.
One of the unique aspects of Spinoza's major work, the Ethics, is its formal or "geometric" structure. The book is written following the model of Euclid's Elements, with Definitions, Axioms, Propositions, and Demonstrations. In this seminar, we scrutinize the deductive structure of the Ethics and some of its earlier drafts. We consider the role and epistemic status of the definitions and axioms, attempt to provide rigorous reconstructions of some of its key propositions, and also investigate the possibility of alternative routes between these propositions.
Instructor(s): J. Bledin; Y. Melamed
Area: Humanities.

AS.150.448. The Religion of Morality. 3.0 Credits.
In the wake of the Enlightenment criticism of traditional forms of religion, philosophers attempted to give religion a rational basis by equating it with moral practice. We will examine this religion of morality with the goal of determining whether it can vindicate its claim to be a genuine religion.
We will read texts by Rousseau, Kant, Fichte, Hegel and Emerson.
Instructor(s): D. Moyar
Area: Humanities.

AS.150.452. Freedom of Will & Moral Responsibility. 3.0 Credits.
What are freedom of the will and moral responsibility? Are they compatible with determinism or naturalism? This course will examine various philosophers' answers to these questions.
Instructor(s): H. Bok
Area: Humanities
Writing Intensive.

AS.150.454. The Value of Humanity. 3.0 Credits.
Are human beings distinctively valuable? What makes us valuable? And how should we respond to the value of human beings? The course is divided into four parts. The first part takes up questions about the basis of human value. We consider various proposals, including Kant's, about the valuable feature or capacity of human beings. Are we valuable in virtue of having a good will, in virtue of being agents, in virtue of being valuers, or something further? The second part takes up questions about the explanation of the value of human beings. Does the proposed feature make us valuable because it instantiates a simple value property, making us valuable in ourselves, or simpliciter? We consider whether the notion of value simpliciter is a notion we fully understand, or need. Does the proposed feature make us valuable because it makes us good-for something or someone? Who or what does it make us good-for? Or again, does the proposed feature make us such that we are objects of an appropriate attitude or practical stance? If so, what is the attitude or stance? The third part of the course takes up normative questions about the appropriate mode of responding to human beings. We consider whether it makes sense to say that human beings are "ends-in-themselves," and what it would mean to treat a person as an end-in-itself. We also consider various accounts of respect. A guiding question is whether human beings are the only appropriate objects of respect, or whether we can respect other beings, and even artifacts. The fourth part of the class applies what we have learned so far to related topics: to the question of whether human life or existence is valuable, and conversely, whether death is disvaluable. We consider, albeit briefly, the value of human beings in relation to the value of animals. And we ask about the role of Kantian notions like dignity in applied contexts, so that highly philosophical considerations about value are shown to have real-world bearing.
Instructor(s): L. Theunissen
Area: Humanities.
AS.150.456. Medieval Philosophy. 3.0 Credits.
Instructor(s): S. Ogden
Area: Humanities.

AS.150.457. Color and Color Perception. 3.0 Credits.
An examination of philosophically relevant discussions of the nature of color and color perception, from both historical and contemporary perspectives.
Instructor(s): E. Forster; S. Gross
Area: Humanities.

AS.150.460. Rawls and His Critics. 3.0 Credits.
John Rawls was the most important moral and political thinker of the 20th century. In this course we will look at his two main works, A Theory of Justice and Political Liberalism, along with some of the more influential criticisms of his ideas. Main topics will include the derivation of principles of justice, the role of the good in liberal political theory and the nature of reasonable pluralism.
Instructor(s): D. Moyar; H. Bok
Area: Humanities.

AS.150.461. Russell, Frege, Wittgenstein: Foundations of Analytic Philosophy. 3.0 Credits.
Russell, Frege, and Wittgenstein (in Tractatus) provided much of the philosophical foundation for 20th C. analytic philosophy. Their influence continues to be felt, especially in their conception of philosophical problems and the methods by which they can be solved.
Instructor(s): M. Williams
Area: Humanities.

AS.150.462. Islamic Political Philosophy. 3.0 Credits.
An introduction to the history of Islamic political philosophy, primarily focused on two flashpoints of encounter between the religion of Islam and other philosophical/political systems—an early one with ancient Greek philosophy (especially in the works of Plato and Aristotle), and a period of interface with modern Western secular political thought, from the late 19th century to present. Our goal will be to try to understand some of the varying responses in each period as Muslim thinkers seek authentic engagement with external and internal trends, both religious and philosophical. The focus will be on primary texts from philosophically engaged thinkers (who may or may not consider themselves philosophers).
Instructor(s): S. Ogden
Area: Humanities.

AS.150.466. Recent Work in Skepticism. 3.0 Credits.
We all take it for granted that perceptual experience yields knowledge of the world around us. But in the first of his Meditations on First Philosophy, Descartes invents a new and puzzling thought experiment. He imagines an Evil Demon with the power to manipulate the total course of his (Descartes’s) experience, so that what he naturally takes to be experience of the world around him is really a kind of perpetual dream: a simulation or virtual reality, as we might way today. Descartes’s problem, which has made its way into popular culture through films like those in the “Matrix” series, remains a source of philosophical puzzlement. While no one believes that skeptical hypotheses like Demon or computer deception are true, it is not easy to say how we can exclude them. Given that the deception is systematic, it seems that any “evidence” I cite could itself be part of the simulation. So how do I (or could I) know (for sure) that I’m not the victim of the Deceiver or the Matrix? We shall examine some of the latest attempts to respond to Descartes’s challenge. Does the “How could I know?” question admit of a theoretical answer, or is the question itself somehow ill-posed? Can we answer it without making significant concessions to skepticism? Exploring such questions should teach us some interesting lessons about knowledge (or the concept of knowledge).
Instructor(s): M. Williams
Area: Humanities.

AS.150.467. Philosophic Logic. 3.0 Credits.
This course is a survey of various topics in philosophical logic. We begin with a review of the model theory of classical first-order logic (FOL). In our first unit, we will then move beyond the standard existential and universal quantifiers of FOL and consider generalized quantifiers, substitutional quantifiers, and plural quantification. In our second unit, we investigate the theory of propositional modal logic, considering its syntax, semantics, proof theory, and some of its applications. In our fourth unit, we inquire into the nature and normativity of logical validity.
Instructor(s): J. Bledin
Area: Humanities.

AS.150.468. Global Food Ethics. 3.0 Credits.
This course is an introduction to ethical issues that arise within the contemporary global agrifood system. The overarching goal of the class is to give you the opportunity to think critically about a variety of conflicting views as to how we should produce, distribute, and consume food to achieve food security for over 9.6 billion people by 2050. We will borrow tools from practical ethics and theories of justice to shed light on these pressing issues that determine our common future and the way we personally relate to the food we eat.
Instructor(s): Y. Saghai
Area: Humanities.

AS.150.474. Justice and Health. 3.0 Credits.
Course will consider the bearing of theories of justice on health care. Topics will include national health insurance, rationing and cost containment, and what justice requires of researchers in developing countries.
Instructor(s): H. Bok
Area: Humanities.

AS.150.475. Addiction, Depression, and the Self. 3.0 Credits.
An examination of the moral implications and effects of addiction, depression and Pharmacological treatments for depression on our conception of our own agency. Recommended Course Background: AS.150.219, AS.150.220, or permission required.
Instructor(s): H. Bok
Area: Humanities
Writing Intensive.
AS.150.476. Philosophy and Cognitive Science. 3.0 Credits.
This term's topic will be "cognitive penetration". Can what you believe change how things look and sound? For example, do paintings look different to someone who knows a lot about art history and aesthetics? Can racial prejudice cause someone to see a cellphone as a gun? If your beliefs can alter your perceptions, how can perceptions provide neutral justification for beliefs? And how does one draw a distinction between perception and thought in the first place? Readings will be drawn both from philosophy (e.g., Fodor, Block, Siegel) and psychology (e.g., Pylyshyn, Firestone, Lupyan). Recommended Course Background: Some previous exposure to philosophy, the mind-brain sciences, or other relevant background.
Instructor(s): S. Gross
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.150.479. The Ethics of Making Babies. 3.0 Credits.
In this class, we will investigate many aspects of the ethics of making babies, asking not only which children we should create and how we should create them, but whether we should make any more people at all. Investigating these questions will take us through large chunks of moral theory, bioethics, and public health ethics. For more information, or to request permission of the instructor (for those who do not meet the prerequisite requirements), email Travis Rieder at trieder@jhu.edu. Recommended Course Background: One course in ethics or bioethics, or permission of the instructor.
Instructor(s): T. Rieder
Area: Humanities.

AS.150.482. Food Ethics. 3.0 Credits.
Eating is an essential human activity: we need to eat to survive. But how should we eat? In this course, we consider such ethical questions as: Are certain forms of agriculture better for the environment, and is this a decisive reason to support them? What is the extent of hunger and food insecurity, in this country and globally, and what should be done about it? Is it morally wrong to make animals suffer and to kill them in order to eat them? Should we eat in ways that express and honor our cultures, our religions, and our family traditions—or is this comparatively unimportant? Should the government try to influence our food choices, to make them healthier?
Instructor(s): A. Barnhill
Area: Humanities.

AS.150.483. Topics in Jewish Philosophy: Heresy. 3.0 Credits.
Hassidism is the ecstatic religious movement that emerged in East European Jewry in the mid-eighteenth century. In this research seminar we will concentrate on the teachings and activities of the circle of Dov Ber of Mezritch between 1760 and 1772. We will study both internal and external sources (such as Salomon Maimon's report in his Lebensgeschichte). All materials will be available in English translation, though reading knowledge of Hebrew would be an asset.
Instructor(s): Y. Melamed

AS.150.487. Fundamental Principles of Philosophical Rationalism. 3.0 Credits.
At the center of Leibniz rationalist metaphysics are four interrelated philosophical principles: (1) The Law of Non-Contradiction, (2) The Principle of Sufficient Reason (roughly, the claim that everything must have a reason), (3) The Identity of Indiscernibles (roughly, the claim that there are no two perfectly similar things), and (4) The Predicate in Subject Principle (the claim that in every true proposition the concept of the predicate is somehow contained in the concept of the subject). In this class we will study these four principles, i.e., their modal strength, range, justification, and interrelations both in early modern philosophy (Leibniz, Spinoza, and Clarke), and in contemporary philosophy (Della Rocca, Sam Levey, Dasgupta, Max Black).
Instructor(s): J. Bledin; Y. Melamed
Area: Humanities.
AS.150.600. Reason Virtue and the Good.
This is a course in theoretical ethics structured around the topics of reason, virtue, and the good. Questions include: Are there types of value? What is it to value something? Is there a property good? What would it mean for goodness to be relational rather than non-relational? What is the ground of excellence? How is excellence related to the good? Should we understand virtue on the model of perception? Is there an important difference between facts and values? Is there something distinctive about practical reason? What is the role of the good in intentional action?
Instructor(s): L. Theunissen
Area: Humanities.

An introduction to the major theories of probability and to theories of evidence. There are no mathematical or philosophical pre-requisites.
Instructor(s): P. Achinstein
Area: Humanities, Quantitative and Mathematical Sciences.

AS.150.604. Graduate Seminar in the Philosophy of Science: The Big Issues.
Readings from Duhem, Carnap, Hempel, Popper, Quine, Kuhn, Feyerabend, van Fraassen, and others who, in the 20th and 21st centuries, got us where we are in the field today. And Quine added: philosophy of science is philosophy enough. Is it?
Instructor(s): P. Achinstein
Area: Humanities, Social and Behavioral Sciences.

AS.150.605. Foundations of Ethics.
The seminar will serve as an advanced, topical introduction to normative theories in ethics, and will include some meta-ethics. Our central question is: what is the foundation, or motivational basis, of ethics? Is it the individual asking what she wants for her life? Is it the determination of rational requirements on action? We think about the relationship between reason, reasons, and motivation. We consider the debate over internalism and externalism about reasons. We work through the distinction between agent-neutral and agent-relative reasons and values. Among others, we will read Thomas Nagel, Phillipa Foot, Shelly Kagan, Samuel Scheffler, Derek Parfit, G. E. M. Anscombe, and Bernard Williams.
Instructor(s): L. Theunissen
Area: Humanities.

Course will focus on ancient skepticism as a way of life, and on the role of epistemological argument in skepticism so conceived. The seminar will end with a brief look at early modern reactions to ancient skepticism.
Instructor(s): M. Williams; R. Bett.

AS.150.607. Graduate Seminar: Knowledge and Perception.
How does perception reveal the world, if it does? Why have philosophical reflections on perception often led to skepticism? For background, we will start with readings from Ayer and Austin (on the sense-datum theory), and Sellars (on the Myth of the Given). We will then spend time on contemporary “disjunctive” accounts of perceptual consciousness, with readings from McDowell, Travis and (possibly) others.
Instructor(s): M. Williams
Area: Humanities.

AS.150.608. Graduate Seminar-Speculation: Scientific and Philosophical.
Some say that speculation whether in science or philosophy, should be avoided at all costs (e.g., Descartes, Newton). Others say that speculation is okay as long as it is followed by argument or evidence (e.g., Popper). Still others encourage one to freely speculate in the absence of argument or evidence (e.g., Feyerabend). Are any of these views right? What is speculation, and is it subject to any universal standards? What is evidence, and is it subject to universal standards? Readings will be from authors mentioned above and from quite a few others. We will look at some very general influential philosophical=scientific speculations, such as the claim that nature is simple and that everything is explainable, as well as some more specific ones.
Instructor(s): P. Achinstein
Area: Humanities.

AS.150.609. Fichte, Schelling and Spinoza.
Spinoza constituted a major philosophical interlocutor for both Fichte and Schelling. In this class will study the critical reception of Spinoza by the two philosophers. Among the topics we intend to discuss are: freedom, God, the concept of substance, the nature of thought, and reason. Recommended Course Background: Previous acquaintance with Spinoza’s ethics.
Instructor(s): E. Forster; Y. Melamed
Area: Humanities.

AS.150.610. Virtue Ethics.
A study of recent work in virtue ethics.
Instructor(s): H. Bok.

AS.150.614. Topics in Meta-Ethics (Graduate Seminar).
This is a seminar on theoretical topics in ethics. We focus on debates over cognitivism and non-cognitivism; realism and anti-realism; reasons internalism and externalism; relativism and skepticism. We read contemporary classics by Sharon Street, T. M. Scanlon, Joseph Raz, Bernard Williams, Allan Gibbard, and others.
Instructor(s): L. Theunissen
Area: Humanities.

AS.150.615. Martin Heidegger, Being and Time: Integral Reading and Current Perspectives.
Starting with a detailed discussion of its Introduction and Division One, this jointly taught seminar will bring phenomenological, hermeneutic, and deconstructive as well as analytic, epistemological, and pragmatist methods and viewpoints to bear upon this modern classic. Co-listed with AS.300.653
Instructor(s): H. de Vries; M. Williams
Area: Humanities.

AS.150.616. Martin Heidegger, Being and Time: Integral Reading and Current Perspectives II.
Starting with a brief overview and recapitulation of themes discussed in its Introduction and Division One, this jointly will focus on Division Two of Being and Time and bring phenomenological, hermeneutic, and deconstructive as well as analytic, epistemological, and pragmatist methods and viewpoints to bear upon this modern classic.
Instructor(s): H. de Vries; M. Williams
Area: Humanities.

AS.150.619. Topics in Hegel's Philosophy: The Philosophy of Right.
This course will be a close reading of G.W.F. Hegel’s Philosophy of Right. Some of the main topics for discussion will be the relation of law and morality, the dependence of the political philosophy on Hegel’s Logic, and the relation of individual and social conceptions of freedom.
Instructor(s): D. Moyar
Area: Humanities.
AS.150.625. Fatalism and the Logic of Unconditionals.
Since the early eighties, there has been a growing movement away from traditional truth-cenric theories of meaning and consequence towards more information-oriented accounts. Given these relatively new developments, I think the time is ripe for reconsidering one of the oldest arguments in philosophy: the "Idle Argument" for fatalism. This notorious argument survives in Cicero's De Fato from 44BC but the version that we will focus on in the seminar is based on Dummett's classic "Bringing About the Past" [1964].
Instructor(s): J. Bledin
Area: Humanities.

AS.150.627. Seminar in Epistemology.
Topic: Realism and its Critics Questions circling around issues of "realism" have been prominent in contemporary philosophy. Some philosophers argue for or against realism across the board. Here the fundamental issue is often taken to be semantic: can truth be radically evidence-transcendent, so that a proposition must be true or false even if we will never have evidence one way or another? But there are also more local questions. Do scientific theories that postulate unobservables aim to state literal truths about such theoretical entities (as scientific realists claim), or are they better understood as devices for linking and systematizing observational evidence (as instrumentalists or constructive empiricists argue)? Are there mind-independent moral or aesthetic facts (as moral and aesthetic realists suppose), or are moral and aesthetic judgments better understood in some other way, for example as fundamentally "expressive" rather than "descriptive". Many philosophers continue to hold that such questions raise deep metaphysical issues. But this view has been challenged by metaphysical quietists, who argue that the whole issue of realism versus non- or anti-realism is best avoided. So should we be realists, either in general or selectively? Or is quietism the better option? What is realism anyway? The aim of this seminar is to explore influential arguments that arise in the attempt to answer such questions.
Instructor(s): M. Williams; P. Achinstein
Area: Humanities.

AS.150.632. Formal Logic.
"An introduction to symbolic logic and probability. In the first two parts of the course we study formal ways of determining whether a conclusion follows from its premises. Included are truth-functional logic and predicate logic. In the third part we study the basic rules of probability, and learn how to make probability calculations and decisions in life." Co-listed with AS.150.118 (for undergraduate students) (01-F 11:00-11:50am).
Instructor(s): P. Achinstein
Area: Humanities, Quantitative and Mathematical Sciences.

AS.150.633. Kant's Opus Postumum.
This research seminar examines the reasons that led Kant to revise his transcendental philosophy late in life. Special attention to problems in the Metaphysics of Nature and the Metaphysics of Morals. Students should be familiar with Kant's theoretical and practical philosophy. Instructor(s): E. Forster.

AS.150.636. Spinoza and Hegel.
Spinoza and Hegel are two of the greatest philosophers of the modern period. Both philosophers are bold and difficult, and both exerted a decisive influence on later developments of Western philosophy. In this class, we will attempt to reconstruct a philosophical dialogue between the two philosophers. Topics to be discussed include: the nature of philosophy, basic ontology, kinds of knowledge, negation and contradiction, freedom, the reality of time, teleology and human history, the role and value of the state.
Instructor(s): E. Forster; Y. Melamed
Area: Humanities.

This seminar will focus on language acquisition as involving a special kind of learning, one that requires the active participation of an adult in what the child does. The account we will be discussing draws heavily on Wittgenstein's philosophy of language, particular the treatment of the problem of similarity and the development of reference.
Instructor(s): M. Williams
Area: Humanities.

Although all three were Copernicans in the broad sense, these great mathematician-philosophers of the 17th century held subtly different positions on the question whether the sun or the earth moves, in large part because they proposed very different analyses of what it is for a body to move. These analyses emerge from quite divergent views on space, time, matter, mind, and scientific-philosophical method in relation to natural theology. The focus of the seminar is on the interaction of these views: Newton's rejection of Descartes' followed by the clash between Newton's and Leibniz's.
Instructor(s): R. Rynasiewicz
Area: Humanities.

AS.150.652. Seminar in the Philosophy of Science.
Philosophy of experiment, Bayesianism, severe tests. Readings from Hacking, Galison, Franklin, Mayo, and others. Applications range from physiology to cosmology.
Instructor(s): R. Rynasiewicz
Area: Humanities, Social and Behavioral Sciences.

AS.150.653. Seminar in Philosophy in Physics.
Philosophical Problems of Cosmology. Topics include: the nature of spacetime; physical infinity; the arrow of time; laws of nature and initial conditions; limits to explanation; applicability of quantum mechanics to the universe as a whole; inflation; selection effects and the anthropic principle, multiverses, objective probability.
Instructor(s): R. Rynasiewicz
Area: Humanities.

AS.150.656. Practical Reason in German Idealism.
In this course we will examine the development of idealist theories of practical reason. We will read Kant's Critique of Practical Reason, Fichte's System of Ethics, and selections from Hegel's writings.
Instructor(s): D. Moyar
Area: Humanities.

AS.150.657. Philosophy of Language.
We will investigate one or more specialized topics in formal semantic and pragmatics.
Instructor(s): J. Bledin.
AS.150.658. Topics in the Philosophy of Language.
An examination of recent work in the philosophy of language and/or related work in the philosophy of mind.
Instructor(s): S. Gross.

AS.150.659. Topics in Formal Semantics: Counterfactuals?.
In this seminar, we will investigate the semantics and communicative function of counterfactuals. Among the questions that we will consider are these: What are the compositional semantic values of counterfactual conditionals? What is the context change potential of a counterfactual and what kind of structure must we add to the common ground of a conversation to model its communicative effect? Do counterfactuals recommend a dynamic approach to meaning? Are counterfactual conditionals truth-apt? Do they serve to describe the world? If so, which aspect of reality is a counterfactual sensitive to?
Instructor(s): J. Bledin
Area: Humanities, Social and Behavioral Sciences.

AS.150.667. Explanation in Science and Metaphysics.
Questions about the nature of metaphysical explanation are central to contemporary metaphysics. These questions are relevant to similar debates in philosophy of science about the nature of scientific explanation. In this seminar we will examine questions about the nature and role of metaphysical explanation, specifically focusing on the comparison between metaphysical explanation and scientific explanation.
Instructor(s): E. Taylor
Area: Humanities, Social and Behavioral Sciences.

AS.150.810. Independent Study.
Sec. 01 Theunissen Sec. 02 Förster Sec. 03 Gross Sec. 04 Moyar Sec. 05 Rynasiewicz Sec. 06 Williams (Meredith) Sec. 07 Bok Sec. 08 Bett Sec. 09 Williams (Michael) Sec. 10 Bledin Sec. 11 Achinstein Sec. 12 Melamed
Instructor(s): Staff.

AS.150.811. Directed Study.
Please see AS.150.810 for section numbers to use when registering.
Instructor(s): Staff.

AS.150.812. Directed Study.
Please see AS.150.810 for section number to use when registering.
Instructor(s): Staff.

Preparing philosophy graduate students for the impending job market by discussions of, and practicing for, constructing and submitting dossiers, interviews and giving talks both in and outside one’s particular field. Open to all philosophy graduate students, regardless of year and field. No degree credits. Offered sporadically.
Instructor(s): P. Achinstein.

AS.150.821. Research Seminar in Language and Mind.
A workshop for current departmental research in language and mind. Permission required.
Instructor(s): S. Gross
Area: Humanities.

Cross Listed Courses

Classics
AS.040.241. The Greeks and Their Emotions. 3.0 Credits.
This seminar is meant as an introduction to the study of ancient emotions, with a particular emphasis on how the Greeks of the Archaic, Classical and Hellenistic periods conceptualized, portrayed and lived their emotions through linguistic, literary and artistic expression. After an analysis of how the ancient Greek terminology for the emotions differs from our own, we shall focus on the phenomenon of emotion as deeply rooted in the physical body, and in light of this we will contemplate (and question) its universality. Texts will be read in translation. No knowledge of ancient Greek required.
Instructor(s): M. Asuni
Area: Humanities
Writing Intensive.

History
AS.100.295. American Intellectual History since the Civil War. 3.0 Credits.
Readings in American social thought since 1865, ranging across developments in philosophy, literature, law, economics, and political theory.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Political Science
AS.191.344. Belonging to Nature in the Anthropocene. 3.0 Credits.
This course explores debates in contemporary environmental political thought concerning humanity’s relationship to nature in the Anthropocene. The Anthropocene refers to the era in which “human” activity becomes a force of “nature”—when the impact of human activity on natural processes manifests itself in the stuff of the Earth. For many of us, these planetary transformations are hardly noticeable in day-to-day life, but they are dramatic: we are living through the Earth’s sixth mass extinction. What is our relationship to these transformations? Do we have the power to stop them, or at least to minimize their harmful effects? Course readings and films introduce multiple visions of the human/nature relationship and examine the responses they recommend to these and other questions. The political stakes of these visions are brought to light as we consider: How do visions of the human/nature relationship shape and texture core political concepts like freedom, agency, responsibility, and progress? What do they suggest about the strategies most likely to motivate action amid the uncertainty of the Anthropocene? How do these visions subtly (and not so subtly) relegate some to the realm of “nature” so that others can be classified as “human”?
Instructor(s): S. Erev
Writing Intensive.

Islamic Studies
AS.194.401. Themes in Medieval Islamic Thought. 3.0 Credits.
This seminar examines medieval Muslim thinkers who addressed themes at the intersection of theology, philosophy, science, and ethics: the definition of the nature of God’s attributes, His uniqueness, transcendence and omnipotence; human freewill and the limits of human knowledge; the nature of the world; and the relationship among reason, religion, and science. The course will look at how these and other crucial themes were addressed by major medieval philosophers and philosophical schools not only in Islam, but also in Judaism and Christianity, and highlight similarities and differences among the three major monotheistic faiths.
Instructor(s): G. Ferrario.
Psychological Brain Sciences
AS.200.336. Foundations of Mind. 4.0 Credits.
An interdisciplinary investigation into the innateness of concepts: perception, number, language, and morality, physics discussed. Evidence from animals, infants, patients, brains. Students collect data in sections investigating claims from the readings. Cross-listed with Cognitive Science and Philosophy.
Instructor(s): J. Halberda; L. Feigenson
Area: Social and Behavioral Sciences.

German Romance Languages Literatures
AS.211.265. Panorama of German Thought. 3.0 Credits.
This course explores the rich terrain of German literature and philosophical thought, from Kant to today. At each meeting, we will investigate canonical texts of the German intellectual tradition, with an eye to discovering their unity as “German” philosophical and cultural artifacts and icons, as well as with an interest in establishing their well-deserved place in the wider, global discourses of world literature. In this way, we will learn to think critically in and with these important literary and philosophical texts from German-speaking lands as a means of viewing and appreciating the full panorama of German thought. Among authors read and discussed will be Kant, Goethe, Schiller, Hegel, Kleist, Heine, Fontane, Nietzsche, Freud, Kafka, Heidegger, Mann and Bernhard. Readings and discussion will be in English. German is appreciated but not required.
Instructor(s): M. Dornbach
Area: Humanities
Writing Intensive.

AS.211.707. Film and Philosophy: The Surrealist Cinema of Alejandro Jodorowsky.
The films of Chilean cult director Alejandro Jodorowsky have confounded, infuriated, and intrigued critics and audiences alike throughout his 50-plus-year career. In this seminar we will examine the expanse of his cinematic production in order to delve into fundamental philosophical questions of representation, violence, and the relation between visual imagery and poetry.
Instructor(s): W. Egginton
Area: Humanities
Writing Intensive.

What if Rousseau's description of the sentiment de l'existence were to join to the models of consciousness Damasio develops in The Feeling of What Happens? This course explores aspects of consciousness in French literature (Rousseau, Sand, Nerval, Amiel, Flaubert, Valéry, Proust, Sartre) in a dialogue with recent texts in theory, philosophy, neuroscience (e.g. Poulet, Merleau-Ponty, Sartre, Scarry, Noé, Humphrey, Damasio, Sacks). 
Instructor(s): E. Ender
Area: Humanities
Writing Intensive.

AS.213.313. Heidegger's "Being and Time" and "Rectify". 3.0 Credits.
This course will introduce students to Heidegger's seminal work as seen through the lens of the TV series Rectify, which considers what it means to be "thrown" into the world and how we construct a meaningful horizon for our experiences. We will explore some of the fundamental concepts in Being and Time, including care, projection, falleness, affect and time, and being-onto-death, and consider how these same issues are taken up in Rectify, which as a TV show has to develop its own visual vocabulary to explore the structure and nature of being in the world. Taught in English
Instructor(s): R. Tobias
Area: Humanities.

AS.213.374. Existentialism in Literature and Philosophy. 3.0 Credits.
This course explores the themes of existentialism, including the meaning of existence, the nature of the self, authenticity and inauthenticity, the inescapability of death, the experience of time, anxiety, freedom and responsibility to others, in literary and philosophical works. It will be examined why these philosophical ideas often seem to demand literary expression, or bear a close relation to literary works. Readings may include writings by Kierkegaard, Nietzsche, Tolstoy, Heidegger, Rilke, Kafka, Sartre, de Beauvoir, and Camus, among others. Course will be taught by the Kurrelmeyer Chair in German. Taught in English.
Instructor(s): Staff
Area: Humanities.

AS.213.666. "To be continued"- Seriality in Literature and Other Media.
Taught in German. By ending with the words "(To be continued)" [(ist fortzusetzen)], Goethe's Wilhem Meisters Wanderjahre not only reflects on the open form of the modern novel but also points toward serialized formats of fiction as they emerge in the 19th century due to advances in printing technologies. The publication of fiction in periodical installments in magazines or newspapers brings about the development of new genres (serialized novel/Feuilletonroman) along with specific serial narrative techniques. The cliffhanger e.g. – although invented earlier – becomes a prominent technique to create suspense. The course analyzes seriality with respect to narrative forms and genres across various media (literature, theater, film, TV) from the 19th century to the present. It further discusses serial aesthetics, seriality in structuralist and poststructuralist theory as well as the ambivalent status of seriality in the arts between avantgarde and popular culture. The course material will include: Stifter, Fontane, excerpts from the magazine "Die Gartenlaube", Wagner, Freud, Kafka, Lévi-Strauss, Deleuze, Eco, Iser, "The Perils of Pauline" (serial, 1914), "Copycat" (Jon Amiel, 1995), "Twin Peaks" and current US-American TV series.
Instructor(s): E. Strowick
Area: Humanities
Writing Intensive.

AS.213.705. Hegel's Phenomenology of Spirit.
We will study key passages of The Phenomenology of Spirit from a queer-feminist perspective and engage with some of the feminist scholarship on Hegel
Instructor(s): K. Pahl
Area: Humanities

The course explores some aspects of the contradictory constitution of the modern subject as a subject that is split, opposed, in tension.
Two archetypal figures of this split are the "bourgeois", as the social-economic subject, and the "citoyen" or "citizen", as the political subject. The bourgeois and the citizen are defined by distinct and opposing conceptions of the “will,” of education (Bildung), and of the relation between law and nature, normativity and facticity. In asking how to understand the conflictual relationship between these two basic figures of the modern subject, the course will focus especially on the paradoxes of “individual rights” (subjektive Rechte) as the fundamental mechanism of modern subject-formation. How do rights both empower subjects, while also contributing to forms of their disempowerment? To what extent do rights contain and organize the tensions between subjects understood as social or economic, and as political? CLASS BEGINS FEBRUARY 25 AND ENDS APRIL 1. Readings will include excerpts from (among others): Hegel, Marx, Nietzsche, Horkheimer and Adorno, Heidegger, Foucault, Balibar and Rancière.
Instructor(s): C. Menke; R. Tobias
Area: Humanities.
AS.214.479. Dante Visits the Afterlife: The Divine Comedy. 3.0 Credits.
Dante’s Divina commedia is the greatest long poem of the Middle Ages; some say the greatest poem of all time. We will study the Commedia critically to find: (1) What it reveals about the worldview of late-medieval Europe; (2) how it works as poetry; (3) its relation to the intellectual cultures of pagan antiquity and Latin (Catholic) Christianity; (4) its presentation of political and social issues; (5) its influence on intellectual history, in Italy and elsewhere; (6) the challenges it presents to modern readers and translators; (7) what it reveals about Dante’s understanding of cosmology, world history and culture. We will read and discuss the Commedia in English, but students will be expected to familiarize themselves with key Italian terms and concepts. Students taking section 02 (for 4 credits) will spend an additional hour working in Italian at a time to be mutually decided upon by students and professor.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

Giambattista Vico’s Principi di scienza nuova d’intorno alla comune natura delle nazioni (1725, 1730, 1744) was intended to found an “ideal” and “eternal” model of human development, valid for all societies. Vico considered his project both philology and philosophy, and tried to revolutionize thinking about human history as practiced between about 1550 and 1700, by exposing misconceptions behind attempts to square “sacred history” (the presumed historical accuracy of the Bible) with “profane” or non Judeo-Christian concepts of history, both ancient and modern. The culture shock underlying this “old science” stimulated Vico to base philosophical and historical knowledge of mythology on a conception of narration. Recommended Course background: Italian and Latin
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

Theatre Arts Studies
AS.225.328. The Existential Drama: Philosophy and Theatre of the Absurd. 3.0 Credits.
Existentialism, a powerful movement in modern drama and theatre, has had a profound influence on contemporary political thought, ethics, and psychology, and has transformed our very notion of how to stage a play. Selected readings and lectures on the philosophy of Kierkegaard, Nietzsche, Camus and Sartre – and discussion of works for the stage by Sartre, Ionesco, Genet, Beckett, Albee, Pinter, Athol Fugard (with Nkani & Nshone), Heiner Müller and the late plays of Caryl Churchill. Opportunities for projects on Dürenmatt, Frisch, Havel, Wittkiewicz, and Mrozek.
Instructor(s): J. Martin
Area: Humanities
Writing Intensive.

AS.300.228. Brain and Society. 3.0 Credits.
On April 2, 2013, President Obama unveiled the Brain Activity Map Project, a 100 million dollar investment to map the single-celled neurons composing the human brain. Scientific in its aim, the project is culturally significant as well. Popular websites lumosity.com and neuronetlearning.com offer brain-exercises to boost intelligence, while the emergent academic fields neurophilosophy, neuroethics, and neurohistory borrow from the brain sciences. The interaction between the brain and society, however, is by no means new. In this course, we will investigate the origins of brain maps and trace their reception in nineteenth-century European and American literature, philosophy, and politics. Topics include phrenology, the nervous system, psychopathology, and brain localization, and these fields’ resonance in German Idealism, Victorian literature, French anthropology, and American fiction. The course is reading intensive.
Instructor(s): L. McGrath
Area: Humanities, Social and Behavioral Sciences.

AS.300.327. Introduction to Comparative American Cultures: Obama and Philosophy. 3.0 Credits.
This course will investigate the philosophical as well as theological, juridical and political, and rhetorical and literary backgrounds that have informed and shaped Barack Obama’s writings, speeches, and policy strategies leading up to and during his presidency. While paying minute attention to a few selected controversial debates in domestic and international governance and relations, and while discussing the question of Obama’s legacy in and after the upcoming elections, our primary focus will be on understanding the curious blend of Christian realism, influenced by the theologian Reinhold Niebuhr, the tradition of American civic republicanism and pragmatism, and Obama’s specific brand of post-Civil Rights, if not necessarily post-racial, politics. All these tenets coalesce in a vision and politics that may well be described as one of “deep” pragmatism. Attention will be paid to Obama’s early appeal to “simple ideas” and “small miracles,” each of them yielding the Biblical and sobered injunction of a “hope against hope.” But extensive consideration of his thought and impact in the assessment of biographers and intellectual historians, legal scholars and political theorists, cultural critics and pundits will add to our attempt to understand and take stock of the Obama phenomenon as well.
Instructor(s): H. de Vries
Area: Humanities.

Comparative Thought and Literature
AS.300.399. Cinema and Philosophy. 3.0 Credits.
Do movies have anything to say about philosophical problems? Why is contemporary philosophy so interested in cinema? What are the most productive ways of bringing films and philosophy into conversation? Why is contemporary philosophy so interested in cinema?
Instructor(s): M. McCreary, P. Marrati
Area: Humanities.
AS.300.422. Luther, Philosophy, Politics: 500 Years After the Reformation. 3.0 Credits.
As historical legend has it, in 1517 the German monk and then professor of theology Martin Luther inaugurated a revolution in thinking, belief and moral practice, known as the Protestant Reformation by nailing his Ninety-Five Theses, under the title Disputation on the Power of Indulgences, to the door of the Castle Church of Wittenberg. Known for his brutal characterization of reason as "the devil's whore," his theology of the hidden god, his catechisms, the doctrine of the two realms, and his condemnation of peasants' revolts of his days, Luther's influence has been profound and lasting. We will study some of his most influential theses, treatises, and sermons and will seek to gauge the effect they had on the Western narrative of secularization and modernity, together with their deep influence on post-Reformation and, indeed, recent philosophy and political thought. Readings include: Luther, G.W. F. Hegel, Max Weber, Martin Heidegger, Karl Barth, Erik Peterson, Dietrich Bonhoeffer, Kaj Munk, Ernst Bloch, Philippe Lacoue-Labarthe, Marcel Gauchet, Giorgio Agamben, and others.
Instructor(s): H. de Vries
Area: Humanities.

AS.300.424. Psychoanalysis as a Theory of Thinking. 3.0 Credits.
This course will introduce students to the writings of Wilfred Bion, the British psychoanalyst who expanded Sigmund Freud's and Melanie Klein's metapsychology. Bion developed an epistemological theory of thinking, surmising that the mind grows when it is exposed to the truth of one's emotional experience. In his many writings and lectures, Bion developed a sophisticated theoretical model that conceptualizes the transformation of emotional experience into the capacity for thought. While in his early writings he is inspired by life sciences and mathematics, in his later writings Bion shifts away from the scientific view to an aesthetic/mystical vertex, drawing on poets mystics and philosophers, such as Keats, Milton, Shakespeare, Sophocles, Meister Eckhart, St John of the Cross, Plato, Hume and Kant.
Instructor(s): O. Ophir
Area: Humanities.

Humanities Center
AS.300.435. Emmanuel Levinas: Essential Works, Guiding Concepts, Lasting Influence. 3.0 Credits.
This seminar will address the major writings and guiding concepts of Emmanuel Levinas and investigate his increasing critical role as a touchstone and dividing line in the formation of twentieth century and contemporary schools of thought (phenomenology, pragmatism, post-analytic philosophy, literary, feminist, and political theory, anthropology). Additional readings will include Stanley Cavell, Jacques Derrida, Vasily Grossman, Jean-François Lyotard, and Hilary Putnam.
Instructor(s): H. de Vries
Area: Humanities.

AS.300.657. Martin Heidegger, Being and Time: Integral Reading and Current Perspectives, II.
Starting with a brief overview and recapitulation of themes discussed in its Introduction and Division One, this jointly will focus on Division Two of Being and Time and bring phenomenological, hermeneutic, and deconstructive as well as analytic, epistemological, and pragmatist methods and viewpoints to bear upon this modern classic.
Instructor(s): H. de Vries; M. Williams.

AS.300.658. Must We Mean What We Say?.
Starting out from Stanley Cavell's programmatic book and title, this seminar will revisit his discussion of J. L. Austin, John Searle, Jacques Derrida, and Shoshana Felman, with special emphasis on these authors' theories of intentionality, seriousness, and sincerity, and with reference to the ancient and modern concepts of tragedy on which they partly rely. In addition to the aforementioned thinkers' relevant works, reading will include selections from Euripides, Henrik Ibsen, Isaiah Berlin, Emmanuel Levinas, and Jean-Luc Marion.
Instructor(s): H. de Vries.

Center for Africana Studies
AS.362.450. Critical Thinking in Africana Studies. 3.0 Credits.
This seminar examines various ideas, theories, and practices of thinkers, writers, and activists whose work and practices have constituted an Africana Studies intellectual tradition. The purpose of this seminar is to teach students to read, think, and write critically about questions relative to the formation and history of Africana thought and its intellectual tradition, in particular, and the genealogy of thought and intellectual traditions, in general. We will also think about various fields of knowledge that have shaped Africana Studies. The seminar therefore will work through the different meanings of intellectual work and critical thought and theory in Africana Studies.
Instructor(s): F. Hayes.
Writing Intensive.

Henry A. Rowland Department of Physics and Astronomy
http://physics-astronomy.jhu.edu/

Johns Hopkins is the nation's first research university. That emphasis on research continues to this day and forms the backbone of the undergraduate and graduate programs in the Department of Physics and Astronomy. The department's research program is focused into four areas of excellence: Astrophysics, Condensed Matter Physics, Elementary Particle Physics, and Plasma Physics. For graduate students interested in these fields, the department offers world-class research opportunities in a friendly and supportive setting. For undergraduates, JHU offers exposure to cutting-edge research combined with a level of personal attention that is typically found only in liberal arts colleges. Nearly all physics majors at JHU work on research projects and many begin as freshmen or sophomores.

All research builds upon an established body of knowledge. To be effective researchers, teachers, or professionals, both undergraduate and graduate students must acquire a core knowledge of physics. Our undergraduate and graduate courses are designed to cover the core subjects at the appropriate levels, leading to advanced courses on a variety of specialized topics. As a consequence, students having different backgrounds or different ultimate objectives can select those parts that are most appropriate for them. The selections are made under the guidance of a faculty advisor. The advisor aids the student in making the most efficient use of his or her time and ensures that his or her
program contains a reasonable balance among classroom and laboratory, mathematics, seminars, and introduction to research.

**Undergraduate Programs**

**Requirements for the B.A. and B.S. Degrees**

(See also Requirements for a Bachelor’s Degree (p. 7).)

The major program is structured so that nearly all students take the same classes during the first two years and must complete the same list of core upper-level courses during their second two years, but permits a variety of choices in upper-level electives. The total number of credits required for the B.A. degree is 120 and the B.S. is 126. By the end of the four years our students share an understanding of classical mechanics, electromagnetism, and quantum mechanics, and have acquired physics lab skills that will support them in graduate school or in a host of other pursuits.

**Core Courses**

**Mathematics**

The standard mathematics requirements for all physics majors consist of:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.113</td>
<td>Honors Single Variable Calculus</td>
<td></td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>AS.110.302</td>
<td>Differential Equations and Applications</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.201</td>
<td>Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.212</td>
<td>Honors Linear Algebra</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 20

**Physics and Astronomy**

The standard physics and astronomy requirements for all physics majors consist of:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.105</td>
<td>Classical Mechanics I</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.115</td>
<td>Classical Mechanics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>AS.171.106</td>
<td>Electricity and Magnetism I</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.116</td>
<td>Electricity and Magnetism Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>AS.171.201</td>
<td>Special Relativity/Waves</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.309</td>
<td>Wave Phenomena with Biophysical Application</td>
<td></td>
</tr>
<tr>
<td>&amp; AS.171.207</td>
<td>and Special Relativity</td>
<td></td>
</tr>
<tr>
<td>AS.172.203</td>
<td>Contemporary Physics Seminar</td>
<td>1</td>
</tr>
<tr>
<td>AS.171.202</td>
<td>Modern Physics</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.310</td>
<td>Biological Physics</td>
<td></td>
</tr>
<tr>
<td>AS.171.204</td>
<td>Classical Mechanics II</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.301</td>
<td>Electromagnetic Theory II</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.303</td>
<td>Quantum Mechanics I</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.304</td>
<td>Quantum Mechanics II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.312</td>
<td>Statistical Physics/Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>AS.173.308</td>
<td>Advanced Physics Laboratory</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 38

*Note: AS.171.101-102, AS.171.103-104 or AS.171.107-108 with their labs is acceptable in place of AS.171.105-106, AS.173.115-116

**Sample Program of Study**

A typical B.S. in Physics program might include the following sequence of courses:

*Note: Because our students arrive with a wide range of mathematical preparation, we advise them to consult the Department of Mathematics to determine the best plan.

**Freshman**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.105 Classical Mechanics I</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.115 Classical Mechanics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>AS.110.108 Calculus I (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.106 Electricity and Magnetism I</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.116 Electricity and Magnetism Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits: 9

**Sophomore**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.172.203 Contemporary Physics Seminar</td>
<td>1</td>
</tr>
<tr>
<td>AS.171.202 Calculus III or 211</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.204 Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.303 Quantum Mechanics I</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.308 Advanced Physics Laboratory</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 13

**Junior**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.301 Electromagnetic Theory II</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.308 Advanced Physics Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>Department elective #1</td>
<td>3-4</td>
</tr>
<tr>
<td>Department elective #2</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Total Credits: 11-12

**Senior**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department elective #3</td>
<td>3-4</td>
</tr>
<tr>
<td>Department elective #4</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Total Credits: 10-11

**B.A. Degree**

Two (2) additional courses (at least 3 credits each) at the 300-600 level in the Department of Physics and Astronomy or approved physics-related courses in other departments. Students who intend to continue Physics
in graduate school are strongly encouraged to take these electives in Physics and Astronomy, and take both AS.171.301 Electromagnetic Theory II and AS.171.312 Statistical Physics/Thermodynamics.

**B.S. in Physics Degree**

Five (5) additional courses (at least 3 credits each) at the 200-600 level in the following departments: Physics and Astronomy, Biology, Biophysics, Chemistry, Cognitive Science, Earth and Planetary Sciences, Mathematics, and/or the School of Engineering (excluding courses listed as 500.xxx, 660.xxx, 551.xxx and 661.xxx). These courses must constitute a coherent and rigorous program of study approved by the Departmental Advisor and Director of Undergraduate Studies no later than the registration period for the fall semester of the senior year. At least four (4) of these courses must be taken in a single department in the Krieger School of Arts and Sciences or within a single department or program in the Whiting School of Engineering (note: called “Department elective” in the above Sample Program of Study). One (1) semester of research may be used as one elective.

**Recommendations**

An additional two semesters of mathematics are recommended, either AS.110.405 Real Analysis I or AS.110.311 Methods of Complex Analysis and one other. It is recommended that Physics majors become proficient in a computer programming language, either independently or through course work. Students are encouraged to broaden their background by taking introductory courses in other natural science or engineering disciplines, such as AS.030.101 Introductory Chemistry I.

**Other Departmental Requirements:**

A grade of C- or higher is required for a course to be counted towards major requirements. This includes required math courses. An exception for a single course taken in the year before graduation may be granted by the Director of Undergraduate Studies when there are extenuating circumstances.

**Honors in the Major:**

To receive Honors in Physics, you must have a GPA in your major requirements of a 3.5 or higher.

**Senior Thesis**

Any student majoring in the department may write a senior thesis, based on original research conducted under the supervision of a member of the faculty. Arrangements for this research will be made on an individual basis. The department views the writing of a senior thesis as an excellent capstone experience to an undergraduate education in physics, and encourages all students to consider it.

**Minor in Physics**

To earn a minor in Physics, a student must complete four (4) courses (at least 3 credits each) at the 200-level or above, plus AS.172.203 Contemporary Physics Seminar

Restrictions: A grade of "C-" or better must be earned in required courses, which may not be taken S/U.

**Donald E. Kerr Memorial Prize**

In recognition of Dr. Kerr's work in microwave physics, the department awards the Donald E. Kerr Memorial Prize each year to the most outstanding undergraduate major graduating in physics.

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**Graduate Programs**

Graduate study in physics and astronomy at Hopkins is intended primarily to prepare Ph.D. graduates for careers in teaching and research in physics and astronomy, or in applications such as biophysics, space physics, and industrial research. Entering students may elect to work toward a Ph.D. in physics or a Ph.D. in astronomy and astrophysics. The two programs are similar in structure but have somewhat different course requirements (see below). A wide range of research projects—both theoretical and experimental—are available for graduate students in Astrophysics, Condensed Matter Physics, Particle Physics, and Plasma Spectroscopy.

**Admission**

To obtain admission, a student is expected to submit evidence that he or she has a good chance to succeed. Such evidence will ordinarily consist of transcripts of previous academic work, Graduate Record Examination scores (including advanced physics), letters of recommendation, and, for international students, a Test of English as a Foreign Language (TOEFL) score.

**Requirements for the Ph.D. Degree**

The Ph.D. program has strong emphasis on early and active involvement in graduate research. Thus, students are required to have a research advisor and file a research summary every semester they are enrolled in the program, starting with the first one. Furthermore, students must complete the required courses with a grade of B- or better, the coursework is typically done over the first two years. In the beginning of the second year, students complete the research examination, and in the beginning of the third year – the University's Graduate Board Oral examination, both of which are based on completed or proposed research. During the first two years, students are typically involved in introductory research projects, which may or may not be related to their thesis work, and sometimes work with several different advisors, but they must identify (and have an agreement with) a thesis advisor no later than the beginning of their third year in the program, after which point students focus on their thesis research. The thesis is to be completed by no later than the end of the 6th year, ending with an oral presentation of the thesis to a faculty committee.

**Course Requirements**

**Ph.D. in Physics**

Students must complete the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.603</td>
<td>Electromagnetic Theory</td>
</tr>
<tr>
<td>AS.171.605</td>
<td>Quantum Mechanics</td>
</tr>
<tr>
<td>&amp; AS.171.606</td>
<td>Quantum Mechanics</td>
</tr>
<tr>
<td>AS.171.703</td>
<td>Advanced Statistical Mechanics</td>
</tr>
<tr>
<td>AS.172.632</td>
<td>Physics Seminar</td>
</tr>
</tbody>
</table>

**Ph.D. in Astronomy and Astrophysics**

Students must complete the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.611</td>
<td>Stellar Structure and Evolution</td>
</tr>
<tr>
<td>AS.171.612</td>
<td>Interstellar Medium andAstrophysical Fluid Dynamics</td>
</tr>
<tr>
<td>AS.171.613</td>
<td>Radiative Astrophysics</td>
</tr>
<tr>
<td>AS.171.627</td>
<td>Astrophysical Dynamics</td>
</tr>
<tr>
<td>AS.172.633</td>
<td>Language Of Astrophysics</td>
</tr>
</tbody>
</table>
The department offers a wide range of graduate physics, astrophysics, mathematical methods and statistics classes, and while only five are required, the students are encouraged to use the flexibility of the graduate program and the available classes to design programs of study that best prepare them for their chosen area of research. In addition to the required courses listed above, below is the list of the graduate courses that have been taught in recent years:

AS.171.610 Numerical Methods-Physics
AS.171.618 Observational Astronomy
AS.171.619 Molecular Astrophysics
AS.171.621 Condensed Matter Physics & AS.171.622 and Condensed Matter Physics
AS.171.625 Experimental Particle Physics
AS.171.639 Group Theory in Physics
AS.171.644 Exoplanets and Planet Formation
AS.171.646 General Relativity
AS.171.648 Physics of Cell Biology: From Mechanics to Information
AS.171.697 Astro-Particle Physics
AS.171.672 Introduction Plasma Physics
AS.171.699 Planets, Life and the Universe
AS.171.701 Quantum Field Theory & AS.171.702 and Quantum Field Theory II
AS.171.704 Phase Transitions and Critical Phenomena
AS.171.732 Elementary Particle Physics
AS.171.750 Cosmology
AS.171.751 Neutron Scattering and Quantum Condensed Matter Physics
AS.171.752 Black Hole Astrophysics
AS.171.753 String Theory
AS.171.755 Fourier Optics and Interferometry in Astronomy
AS.171.762 Advanced Condensed Matter
AS.171.783 Black Hole Physics
AS.171.784 Advanced Particle Theory: "What to Expect at the LHC"
AS.171.785 Advanced Particle Theory: Dark Matter
AS.173.608 Advanced Laboratory

Students in both programs must receive at least a B- in each required course, or they will be required to retake the specific course once more and pass it.

Advising
All entering students are assigned to a first-year advisor who works closely with the student through the first two years of graduate study, or until a thesis advisor is found. The first-year advisor advises the student on courses of study, helps familiarize them with the department and provides guidance in finding research opportunities. In the beginning of each fall semester, the department holds a "research jamboree" where incoming students are introduced to the research in the department through a series of brief talks, lab tours, and research group open houses. Thus, the students are familiar, immediately upon their arrival, with the scope of research in the department and can identify prospective research advisors they may wish to work with.

First and Second-Year Research Requirement
First-year students must find, by the end of the third week of class in the fall semester, and by the end of the first week of class the second semester, as well as before the summer term begins, a member of the professorial faculty to advise them in some type of research project. The students are required to submit a short written summary of that research experience at the end of the semester. Students may continue with one advisor through all three semesters, or they may choose to cycle through several different research advisors. In some cases, one of these first-year research advisors may become a thesis advisor, but in others, the thesis advisor may change. This research requirement continues until the end of the second year, or until the student finds a thesis advisor.

The nature of these first-year research projects may vary from student to student, from one advisor to another, and from one sub-field of physics to another. In some cases they lead to published research. In other cases, they may be first steps in a longer-term research project. And in some cases, they may comprise reading or independent-study projects to develop background for subsequent research. It is left to the individual advisor to determine what the written summary should entail. These research projects are not research assistantships and are performed in addition to other graduate student responsibilities (teaching and graduate classwork), although they are typically merged with RA-supported research for those students supported by RAs.

Thesis Research and Defense
Students are required to find a thesis advisor no later than the beginning of the third year. After the student chooses a thesis advisor, the student forms their Thesis Committee consisting of the advisor and two other faculty members (all Thesis Committees contain at least two full-time faculty from the department). These committees function as extended advisory bodies; students have the opportunity to discuss their progress and problems with several faculty. They also conduct one formal annual review of each student's progress. Research leading to the dissertation can be carried out not only within the Department of Physics and Astronomy, but with appropriate arrangements, either partly or entirely at other locations if necessitated by the project goals. At the conclusion of thesis research, the student presents the written dissertation to the faculty committee and defends the thesis in an oral examination.

Requirements for the M.A. Degree
Although the department does not admit students who intend to pursue the master's degree exclusively, students in the department's Ph.D. program and students in other Ph.D. programs at Johns Hopkins may apply to fulfill the requirements for the M.A. degree in the Department of Physics and Astronomy. Students from other JHU departments must seek approval from their home department and from the Department of Physics and Astronomy before beginning their M.A. studies.

Course Requirements for the M.A.
Students must master the basic undergraduate material covered by the following courses:

AS.171.204 Classical Mechanics II 4
AS.171.301 Electromagnetic Theory II 4
AS.171.303 Quantum Mechanics I 8
& AS.171.304 and Quantum Mechanics II
AS.171.312 Statistical Physics/Thermodynamics 4

Courses taken elsewhere may qualify at the discretion of the Graduate Program Committee.
Students must also complete six one-semester graduate-level (at least three hours/week) courses offered by the Department of Physics and Astronomy. AS.171.801 Independent Research- Graduates-AS.171.802 Independent Research-Graduate may be substituted for any of the above-mentioned graduate or undergraduate courses. The research course must include an essay supervised and approved by a faculty member of the Department of Physics and Astronomy.

The student must receive a grade of B- or above in each of the courses. The graduate-level courses may be retaken once; the undergraduate courses cannot be repeated.

Furthermore, the student must complete at least two semesters of research projects, as described in the requirements for the Ph.D., and complete the departmental research exam. The deadline to fulfill all requirements is the date of the Ph.D. thesis defense.

Facilities
The Department of Physics and Astronomy's first facility was Rowland's measuring engine for determining the solar spectrum in the 1880s. Ever since that time the Department has maintained a long and continuous history in instrumentation. In recent decades this has extended to instrumentation for space missions. The Department maintains a Class-1000 clean room for microfabrication and nanofabrication, a high bay lab, professional and student machine shops, and supports a world-renowned Instrument Development Group (IDG) with six full-time engineers and three full-time machinists.

Among the diverse techniques used for studying condensed matter physics are magnetometry/susceptometry, specific heat and transport measurements, atomic force and magnetic force microscopy, X-ray and electron diffraction, terahertz spectroscopy, and neutron scattering at the nearby NIST Center for Neutron Research and at the Spallation Neutron Source, ORNL. A variety of cryostats, He3 refrigerators, and He3-He4 dilution refrigerators together with high temperature ovens, electromagnets, and superconducting magnets allow measurements to be made from 0.05 K to 1100 K and in magnetic fields up to 14 Tesla. Apparatus for the preparation of samples includes two image furnaces for floating zone growth, single-crystal growth vacuum furnaces, box and tube furnaces, arc furnaces, several high vacuum and ultra-high vacuum chambers for thin film fabrication using evaporation, MBE, pulsed laser deposition, sputtering, and focused ion beam (FIB) milling. Also available on campus are cutting-edge transmission electron microscopes and scanning electron microscopes.

In astrophysics, research groups have state-of-the-art laboratories for testing cryogenic transition-edge bolometer detectors with SQUID read-out electronics, and closed-cycle helium cryogenics. Recent instrumentation advances include the design and manufacture of large free-standing polarization grids and novel high-bandwidth smooth-wall feed horns. Current activities include development of microwave and millimeter-wave instruments for far-infrared and microwave astronomy and cosmology.

The research groups in the department have a wide range of state-of-the-art computer facilities including high performance clusters with over a thousand processors and the largest database at a university—over a petabyte. All undergraduate majors and graduate students have access to high performance workstations.

Financial Aid
Students in good standing are normally supported by a combination of fellowships, research assistantships and teaching assistantships. The financial package covers full tuition, individual health insurance, and an academic year salary commensurate with that of other leading research institutions. Teaching assistantship is a common mode of financial support; experience in teaching is a valuable part of the Ph.D. program. A teaching assistantship supports the student during the academic year and is supplemented by a research assistantship during the summer. The assistant is expected to help in the teaching of the general physics course and other introductory and major courses. The typical teaching duties include leading a problem-solving section or laboratory exercises and homework grading. Research assistantships are based on the availability of funding to the research advisor and are arranged directly with him/her. Research assistantships provide an opportunity for deep engagement in ongoing experimental or theoretical research. In addition, the department and the University offer several fellowships on a competitive basis, some covering travel, supplies or research expenses and some covering a semester’s or a year’s worth of the entire financial package. Some students are supported by external fellowships, such as the pre-doctoral fellowship of the National Science Foundation.

All fellows and teaching and research assistants in the Department of Physics and Astronomy register as full-time students and thus fulfill their residence requirements while holding appointments. Loans and work-study arrangements are available from the Office of Financial Aid.

For current faculty and contact information go to http://physics-astronomy.jhu.edu/people/

Faculty
Chair
Timothy Heckman
Chair and A. Hermann Pfund Professor

Professors
N. Peter Armitage
experimental condensed matter physics.

Charles L. Bennett
Bloomberg Distinguished Professor and Alumni Centennial Professor: experimental astrophysics; cosmology; radio/submillimeter/infrared astronomy; astronomical instrumentation.

Barry J. Blumenfeld
experimental high-energy physics; neutrino physics, hadron colliders.

Collin Broholm
Gerhard H. Dieke Professor (Director, Institute for Quantum Matter): experimental condensed matter physics, using neutron scattering.

Chia-Ling Chien
Jacob L. Hain Professor: experimental condensed matter physics, nanostructured solids.

Andrei V. Gritsan
experimental high-energy physics; colliders.

Marc Kamionkowski

David Kaplan
theoretical particle physics and cosmology.

Julian H. Krolik
theoretical astrophysics, particularly high-energy and relativistic astrophysics.

Robert Leheny
experimental condensed matter physics; disordered materials, soft matter.

Petar Maksimovic
experimental high-energy physics; hadron colliders.

David A. Neufeld
theoretical astrophysics, interstellar medium, astrophysical masers.

Colin A. Norman
theoretical and observational astrophysics.

Daniel H. Reich
experimental condensed matter physics; biological physics.

Adam Riess
Bloomberg Distinguished Professor, Thomas J. Barber Professor, Krieger Eisenhower Professor and Nobel Laureate: observations of physical cosmology, primarily through the use of distance indicators like supernovae; measurements of dark energy and the expansion history of the universe using optical and near-infrared instruments from space and the ground.

Mark O. Robbins
theoretical condensed matter physics; non-equilibrium processes, atomic origins of macroscopic phenomena.

Morris Swartz
experimental high-energy physics; precision tests of and searches for physics beyond the Standard Model.

Alexander Szalay
Bloomberg Distinguished Professor (Director, IDIES): theoretical astrophysics, galaxy formation.

Oleg Tchernyshyov
theoretical condensed matter physics.

Rosemary F. G. Wyse
astrophysics, galaxy formation and evolution (Director, Theoretical Interdisciplinary Physics and Astrophysics Center).

Associate Professors
Jared Kaplan
effective field theory, particle physics, and cosmology.

Tobias Marriage
cosmology and astrophysics.

Brice Menard
extragalactic astrophysics, cosmology, large surveys.

Nadia Zakamska
observational and theoretical astrophysics.

Assistant Professors
Ibrahima Bah
theoretical high-energy physics and cosmology

Brian Camley
physics of cell biology

Yi Li

theoretical condensed matter physics.

Kevin Schlaufman
observational and theoretical astrophysics.

Francesca Serra
soft matter physics and liquid crystals.

Research Professor
Jonathan A. Bagger
Krieger-Eisenhower Professor: particle theory; theory and phenomenology of supersymmetry, supergravity, and superstrings.

Luciana Bianchi
observational astrophysics, nearby galaxies, stellar populations, hot stars, UV instrumentation.

William P. Blair
experimental astrophysics, supernova remnants; cataclysmic variable stars.

Paul D. Feldman
Academy Professor: experimental astrophysics, spectroscopy, space physics, planetary and cometary atmospheres.

Michael Finkenthal
experimental plasma and atomic physics.

Holland Ford
experimental astrophysics; stellar dynamics, evolution of galaxies, active galactic nuclei, astronomical instrumentation.

Riccardo Giacconi
University Professor and Nobel Laureate: experimental astrophysics, extragalactic astronomy, the early universe.

Richard Conn Henry
Academy Professor (Director, Maryland Space Grant Consortium): astronomy and astrophysics.

Stephan McCandliss
experimental astrophysics; sounding rocket space astronomy in the far UV (Director, Center for Astrophysical Sciences).

H. Warren Moos
the interstellar medium; stellar processes; the solar system; space instrumentation.

Joseph Silk
Homewood Professor: cosmology.

Ethan Vishniac
theoretical astrophysics.

Harold Weaver
ultraviolet, optical, infrared, X-ray, and radio spectroscopy and imaging of comets, planets, and satellites.

Associate Research Professor
Tamas Budavari
observational cosmology, large-scale structure, galaxy clustering; data-intensive parallel computing.

Natalia Drichko
condensed matter physics.
Professors Emeriti

Bruce Barnett
Academy Professor: experimental high energy physics; hadron colliders.

Chih-Yung Chien
experimental high-energy physics; hadron colliders.

Gabor Domokos
theoretical elementary particle physics, astroparticle physics.

Brian R. Judd
Gerhard H. Dieke Professor Emeritus: theoretical atomic and molecular physics, group theory, solid state theory.

Chung W. Kim
theory of elementary particles, nuclear theory, cosmology.

Susan Kovesi-Domokos
theoretical elementary particle physics, astroparticle physics.

Yung Keun Lee
experimental nuclear physics.

Aihud Pevsner
Jacob L. Hain Professor Emeritus: experimental elementary particle physics.

Adjunct and Visiting Appointments

Ronald J. Allen
Adjunct Professor (Space Telescope Science Institute): observational astronomy; spiral structure of galaxies, interstellar medium, radio and optical imaging.

Henry Ferguson
Adjunct Professor (Space Telescope Science Institute): observational cosmology, galaxy evolution, dwarf galaxies, space astronomy instrumentation, and calibration.

Ann E. Hornschemeier
Adjunct Associate Professor (NASA Goddard Space Flight Center): studies of x-ray emission from star formation in galaxies at cosmologically interesting distances.

John MacKenty
Adjunct Professor (Space Telescope Science Institute): Astronomy and Astrophysics

Roeland van der Marel
Adjunct Professor (Space Telescope Science Institute): extragalactic observational and theoretical astronomy; galaxy structure, dynamics, and formation; black holes.

Peter McCullough
Adjunct Associate Professor (Space Telescope Science Institute): astronomy.

Predrag Nikolic
Adjunct Associate Professor (George Mason University): theoretical condensed matter physics.

Cedomir Petrovic
Adjunct Professor (Brookhaven National Laboratory): experimental condensed matter physics.

Kimberly Weaver
Adjunct Professor (NASA Goddard Space Flight Center): experimental astrophysics.

Joint Appointments

Tamas Budavari
Assistant Professor (Applied Mathematics) observational cosmology, large-scale structure, galaxy clustering; data-intensive parallel computing.

Gregory Eyink
Professor (Applied Mathematics and Statistics): mathematical physics, fluid mechanics, turbulence, dynamical systems.

Michael Falk
Associate Professor (Materials Science and Engineering): theoretical and computational research.

Taekjip Ha
Bloomberg Distinguished Professor (Department of Biophysics, Department of Biomedical Engineering, Department of Biophysics and Biophysical Chemistry)

Tyrel McQueen
Associate Professor (Chemistry): solid state and inorganic chemistry/condensed matter physics.

Jack Morava
Professor (Mathematics): algebraic topology, mathematical physics.

Peter C. Searson
Professor (Materials Science and Engineering): electronic, nanophase, and semiconductor materials.

Sabine Stanley

Darrell F. Strobel
Professor (Earth and Planetary Sciences): planetary atmospheres and astrophysics.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.171.101. General Physics: Physical Science Major I. 4.0 Credits.
First semester of a two-semester sequence in general physics covers mechanics, heat, sound, electricity and magnetism, optics, and atomic physics. Midterm exams for every section are given during the 8 AM section time! Accordingly, students registering for sections at times other than 8 AM must retain availability for 8 AM sections as needed. Corequisite: AS.110.108-AS.110.109, AS.173.111-AS.173.112
Instructor(s): M. Swartz
Area: Engineering, Natural Sciences.
AS.171.102. General Physics: Physical Science Major II. 4.0 Credits.
Second semester of a two-semester sequence in general physics covers
mechanics, heat, sound, electricity and magnetism, optics, and atomic
physics. Midterm exams for every section are given during the 8 AM
section time! Accordingly, students registering for sections at times
other than 8 AM must retain availability for 8 AM sections as needed.
Recommended Course Background: A grade of C- or better in either
Physics I or the first semester of Intro to Mechanics I (AS.171.101 OR
AS.171.103 OR AS.171.105 OR AS.171.107 OR EN.530.103)
Prerequisites: A grade of C- or better in either Physics 1 or the two-
semester sequence of Engineering Mechanics: (AS.171.101 OR
AS.171.103 OR AS.171.105 OR AS.171.107) OR (EN.530.103 OR
EN.530.123)
Instructor(s): P. Maksimovic
Area: Engineering, Natural Sciences.

AS.171.103. General Physics I for Biological Science Majors. 4.0 Credits.
First-semester of two-semester sequence in calculus-based general
physics, tailored to students majoring in one of the biological sciences.
In this term, the topics covered include the basic principles of classical
mechanics and fluids as well as an introduction to wave motion.
Recommended Corequisites: (AS.173.111) AND (AS.110.106 or
AS.110.108 or AS.110.113). Midterm exams are given at 8am Tuesdays,
so students must leave their schedules open at this time in order to be
able to take these exams
Instructor(s): C. Broholm
Area: Engineering, Natural Sciences.

AS.171.104. General Physics/Biology Majors II. 4.0 Credits.
This two-semester sequence is designed to present a standard calculus-
based physics preparation tailored to students majoring in one of the
biological sciences. Topics in electricity & magnetism, optics, and modern
physics will be covered in this semester. Midterm exams for every section
are given during the 8 AM section time! Accordingly, students registering for
sections at times other than 8 AM must retain availability for 8 AM
sections as needed. Recommended Course Background: A grade of C- or
better in AS.171.101 or AS.171.103; Corequisite: AS.110.109, AS.173.112.
Instructor(s): N. Armitage
Area: Engineering, Natural Sciences.

AS.171.105. Classical Mechanics I. 4.0 Credits.
An in-depth introduction to classical mechanics intended for physics
majors/minors and other students with a strong interest in physics. This
course treats fewer topics than AS.171.101 and AS.171.103 but with
greater mathematical sophistication. It is particularly recommended
for students who intend to take AS.171.201-AS.171.202 or AS.171.309-
AS.171.310. Recommended Corequisites: AS.173.115 and AS.110.108
Instructor(s): M. Robbins
Area: Engineering, Natural Sciences.

AS.171.106. Electricity and Magnetism I. 4.0 Credits.
Classical electricity and magnetism with fewer topics than 171.101-103,
but with greater mathematical sophistication. Particularly recommended
for students who plan to take AS.171.201-AS.171.202. Recommended
Course Background: C- or better in AS.171.105; Corequisite: AS.173.116,
AS.110.109
Instructor(s): C. Bennett
Area: Engineering, Natural Sciences.

AS.171.107. General Physics for Physical Sciences Majors (AL). 4.0
Credits.
This two-semester sequence in general physics is identical in subject
matter to AS.171.101-AS.171.102, covering mechanics, heat, sound,
electricity and magnetism, optics, and modern physics, but differs in
instructional format. Rather than being presented via lectures and
discussion sections, it is instead taught in an “active learning” style
with most class time given to small group problem-solving guided
by instructors. Midterm exams for every section are given during the
8 AM section time! Accordingly, students registering for sections at
times other than 8 AM must retain availability for 8 AM sections as
needed. Recommended Corequisites: (AS.173.111) AND (AS.110.106 or
AS.110.108 or AS.110.113)
Instructor(s): R. Leheny, R. Wyse
Area: Engineering, Natural Sciences.

AS.171.108. General Physics for Physical Science Majors (AL). 4.0
Credits.
This two-semester sequence in general physics is identical in subject
matter to AS.171.101-AS.171.102, covering mechanics, heat, sound,
electricity and magnetism, optics, and modern physics, but differs in
instructional format. Rather than being presented via lectures and
discussion sections, it is instead taught in an “active learning” style
with most class time given to small group problem-solving guided
by instructors. Recommended Course Background: A grade of C- or
better in either Physics I or the first semester of Engineering Mechanics
(AS.171.101 OR AS.171.103 OR AS.171.105 OR AS.171.107 OR
EN.530.103)
Prerequisites: Corequisite: (AS.110.107 OR AS.110.109 OR AS.110.211
OR AS.110.113)
Instructor(s): D. Reich; P. Maksimovic
Area: Engineering, Natural Sciences.

AS.171.113. Subatomic World. 3.0 Credits.
Introduction to the concepts of physics of the subatomic world:
symmetries, relativity, quanta, neutrinos, particles and fields. The course
traces the history of our description of the physical world from the
Greeks through Faraday and Maxwell to quantum mechanics in the early
20th century and on through nuclear physics and particle physics. The
emphasis is on the ideas of modern physics, not on the mathematics.
Intended for non-science majors.
Instructor(s): B. Blumenfeld
Area: Natural Sciences.

AS.171.118. Stars and the Universe: Cosmic Evolution. 3.0 Credits.
This course looks at the evolution of the universe from its origin in a
cosmic explosion to emergence of life on Earth and possibly other
planets throughout the universe. Topics include big-bang cosmology;
origin and evolution of galaxies, stars, planets, life, and intelligence; black
holes; quasars; and relativity theory. The material is largely descriptive,
based on insights from physics, astronomy, geology, chemistry, biology,
and anthropology.
Instructor(s): W. Zheng
Area: Natural Sciences.
AS.171.123. How to build an iPhone: physics in modern life. 3.0 Credits.
As the famous author Arthur C. Clarke posited, “Any sufficiently advanced technology is indistinguishable from magic.” The goal of this course is to understand the workings of and the science behind modern technologies such as the iPhone, internet, GPS, and others. We will discuss the technology itself, as well as the story of how it came to be and the people involved. Emphasis will be on the ideas behind these technologies, not the mathematics. Intended for both nonscience and science majors, every attempt will be made to keep any math at the level of simple algebra.
Instructor(s): C. Morris; L. Pan
Area: Natural Sciences.

AS.171.125. It's not magic, it's physics: Extraordinary Experiments. 3.0 Credits.
Students will learn key concepts of everyday physics through experimentation. They will design, build, and run experiments themselves. The course will be graded on participation and a graded final presentation.
Instructor(s): M. Valdivia Leiva
Area: Natural Sciences.

AS.171.127. Freshman Seminar: The Unsolved Mysteries of the Cosmos. 3.0 Credits.
While our knowledge of the universe has expanded greatly over the past century, there are some very basic problems that stump astronomers to this very day. In this course, we will explore some of the unsolved mysteries that astronomers are actively working on, including the formation of planets to the composition of the universe. This course will be a freshman seminar directed towards non-physical science majors. The focus will be on qualitative questions and phenomena rather than numerical details.
Instructor(s): M. Rahman
Area: Natural Sciences.

AS.171.131. Physics and Technology in Society. 3.0 Credits.
This course presents technology and science issues and how they shape public policy. Students will learn how institutions carry out scientific research while exploring the interactions between the scientific community and policy makers.
Instructor(s): M. Valdivia Leiva
Area: Natural Sciences.

AS.171.132. Now I See! Optical Phenomena Explained. 1.0 Credit.
Could you explain why rainbows form an arc or how it is possible to bend light to make an object invisible? This course aims to clearly explain some of the most beautiful optical phenomena encountered in nature or in a lab by teaching simple physics principles and using in-class demonstrations. The course is not math intensive and, rather, seeks to help the student gain an appreciation for the basic principles behind these optical effects without becoming lost in complex mathematics. An emphasis will be placed on current research that directly makes use of the physics underlying the phenomena. The ultimate goal of this course is to show students that physics is powerfully beautiful and to build their appreciation for it.
Instructor(s): G. Bosse
Area: Natural Sciences.

AS.171.133. Black Holes and Other Compact Objects: For Non-Majors. 3.0 Credits.
This is a lecture and discussion course aimed at undergraduate students who are not physics and astronomy majors. The topic of the lectures will be a basic overview of the qualitative properties of and historical work on compact astrophysical objects (such as black holes, neutron stars, white dwarfs) and related phenomena.
Instructor(s): J. Bankert
Area: Natural Sciences.

AS.171.201. Special Relativity/Waves. 4.0 Credits.
Course continues introductory physics sequence (begins with AS.171.105-AS.171.106). Special theory of relativity, forced and damped oscillators, Fourier analysis, wave equation, reflection and transmission, diffraction and interference, dispersion. Meets with AS.171.207.
Prerequisites: Corequisite: AS.110.202 OR AS.110.211; Students must have completed Lab Safety training prior to registering for this class.; (AS.171.106 OR AS.171.108 OR AS.171.102 OR AS.171.104 ) AND Calculus II (AS.110.107 OR AS.110.109 OR AS.110.113)
Instructor(s): D. Reich
Area: Engineering, Natural Sciences.

AS.171.202. Modern Physics. 4.0 Credits.
Course continues four-semester introductory sequence that includes AS.171.105-AS.171.106 and AS.171.201. Planck's hypothesis, de Broglie waves, Bohr atom, Schrödinger equation in one dimension, hydrogen atom, Pauli exclusion principle, conductors and semiconductors, nuclear physics, particle physics.
Instructor(s): F. Serra
Area: Natural Sciences.

AS.171.204. Classical Mechanics II. 4.0 Credits.
Principles of Newtonian and Lagrangian mechanics; application to central-force motion, rigid body motion, and the theory of small oscillations. Recommended Course Background: AS.110.108 and AS.110.109, AS.110.202, AS.171.201, or AS.171.309. AS.110.201 or equivalent is strongly recommended.
Prerequisites: Pre-req: AS.110.302 or equivalent.
Instructor(s): B. Blumenfeld
Area: Natural Sciences.

AS.171.205. Introduction to Practical Data Science: Beautiful Data. 3.0 Credits.
The class will provide an overview of data science, with an introduction to basic statistical principles, databases, fundamentals of algorithms and data structures, followed by practical problems in data analytics. Recommended Course Background: Familiarity with principles of computing.
Instructor(s): S. Szalay
Area: Natural Sciences, Quantitative and Mathematical Sciences.

AS.171.207. Special Relativity. 1.0 Credit.
Three-week introduction to special relativity for students who elect to take AS.171.209 in place of AS.171.201.
Prerequisites: Corequisite: AS.110.202 OR AS.110.211; Prerequisite: (AS.171.106 preferred OR AS.171.108 OR AS.171.102 OR AS.171.104) AND (AS.110.107 OR AS.110.109 OR AS.110.113)
Instructor(s): D. Reich
Area: Natural Sciences.
AS.171.301. Electromagnetic Theory II. 4.0 Credits.
Static electric and magnetic fields in free space and matter; boundary value problems; electromagnetic induction; Maxwell's equations; and an introduction to electrodynamics.
Prerequisites: Prereqs: (AS.171.102 OR AS.171.104 OR AS.171.106 OR AS.171.108) AND Calculus III (AS.110.202 OR AS.110.211) AND Linear Algebra (AS.110.201 OR AS.110.212)
Instructor(s): K. Schlaflman
Area: Natural Sciences.

AS.171.303. Quantum Mechanics I. 4.0 Credits.
Fundamental aspects of quantum mechanics. Uncertainty relations, Schrödinger equation in one and three dimensions, tunneling, harmonic oscillator, angular momentum, hydrogen atom, spin, Pauli principle, perturbation theory (time-independent and time-dependent), transition probabilities and selection rules, atomic structure, scattering theory. Recommended Course Background: AS.110.302 or AS.110.306.
Prerequisites: (AS.171.202 AND AS.171.204) AND (AS.110.201 OR AS.110.212) AND (AS.110.202 OR AS.110.211)
Instructor(s): C. Chien
Area: Natural Sciences.

AS.171.304. Quantum Mechanics II. 4.0 Credits.
Instructor(s): Y. Li
Area: Natural Sciences.

AS.171.309. Wave Phenomena with Biophysical Application. 4.0 Credits.
Introduction to wave phenomena, primarily through study of biophysical probes that depend on the interaction of electromagnetic radiation with matter. Topics include Fourier Analysis; standing waves; sound and hearing; diffraction and crystallography; geometrical and physical optics – the physics of modern light microscopy; quantum mechanics – how living things absorb light; NMR and MRI. Occasional laboratory exercises are included.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): D. Reich
Area: Natural Sciences.

AS.171.310. Biological Physics. 4.0 Credits.
Introduces topics of classical statistical mechanics. Additional topics include low-Reynolds number hydrodynamics and E&M of ionic solutions, via biologically relevant examples.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.; (AS.171.106 OR AS.171.108 OR AS.171.102 OR AS.171.104) AND (AS.110.107 OR AS.110.109 OR AS.110.113)
Instructor(s): F. Serra
Area: Natural Sciences.

AS.171.312. Statistical Physics/Thermodynamics. 4.0 Credits.
Undergraduate course that develops the laws and general theorems of thermodynamics from a statistical framework.
Prerequisites: AS.171.202 and Calculus II (AS.110.107 or AS.110.109 or AS.110.113). It is recommended that students have also taken Quantum Mechanics (AS.171.303), Linear Algebra (AS.110.201 or AS.110.212) and Calculus III (AS.110.202 or AS.110.211)
Instructor(s): J. Kaplan
Area: Natural Sciences.

AS.171.313. Introduction to Stellar Physics. 3.0 Credits.
Survey of stellar astrophysics. Topics include stellar atmospheres, stellar interiors, nucleosynthesis, stellar evolution, supernovae, white dwarfs, neutron stars, pulsars, black holes, binary stars, accretion disks, protostars, and extrasolar planetary systems. Recommended Course Background: AS.110.108-AS.110.109, AS.171.202
Instructor(s): R. Wyse
Area: Natural Sciences.

AS.171.314. Introduction to Galaxies and Active Galactic Nuclei. 3.0 Credits.
This course will introduce student to the physics of galaxies and their constituents: stars, gas, dust, dark matter and a supermassive black hole in the central regions.
Instructor(s): R. Wyse
Area: Natural Sciences.

AS.171.321. Introduction to Space, Science, and Technology. 3.0 Credits.
Topics include space astronomy, remote observing of the earth, space physics, planetary exploration, human space flight, space environment, orbits, propulsion, spacecraft design, attitude control and communication. Crosslisted by Departments of Earth and Planetary Sciences, Materials Science and Engineering and Mechanical Engineering. Recommended Course Background: AS.171.101-AS.171.102 or similar; AS.110.108-AS.110.109.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. MacKenty; S. McCandliss
Area: Engineering, Natural Sciences.

AS.171.324. Statistical thinking and data analysis. 3.0 Credits.
We live in a complex, data-rich world with a flux of information increasing exponentially. We will start from information theory concepts and learn how to *understand* statistics. We will then learn techniques to reveal structure in a variety of datasets: news reports, scientific articles, geography, cities, social networks, etc. and how to use this knowledge to make decisions and predictions. We will explore patterns, correlations, fractals. This course will allow the student to better understand the complex world we live in. It will involve some python coding. Junior, senior and graduate students only.
Instructor(s): B. Menard
Area: Natural Sciences.

AS.171.333. Planets, Life and the Universe. 3.0 Credits.
This multidisciplinary course explores the origins of life, planets’ formation, Earth’s evolution, extrasolar planets, habitable zones, life in extreme environments, the search for life in the Universe, space missions and planetary protection. Co-listed with AS.020.334, AS.020.616 and AS.270.335
Prerequisites: Students may not register for this class if they have already received credit for AS.020.334 or AS.270.335.
Instructor(s): C. Norman; J. Diruggiero; N. Levin
Area: Engineering, Natural Sciences.

AS.171.405. Condensed Matter Physics. 3.0 Credits.
Undergraduate course covering basic concepts of condensed matter physics: crystal structure, diffraction and reciprocal lattices, electronic and optical properties, band structure, phonons, superconductivity and magnetism. Co-listed with AS.171.621 Recommended Course Background: AS.171.304, AS.110.201-AS.110.202.
Instructor(s): O. Tchernyshyov
Area: Natural Sciences.
AS.171.406. Condensed Matter Physics. 3.0 Credits.
Instructor(s): C. Broholm
Area: Natural Sciences.

AS.171.408. Nuclear and Particle Physics. 3.0 Credits.
Basic properties of nuclei, masses, spins, parity. Nuclear scattering, interaction with electromagnetic radiation, radioactivity, Pions, muons, and elementary particles, including resonances. Recommended Course Background: AS.171.303
Instructor(s): A. Gritsan
Area: Natural Sciences.

AS.171.410. Physical Cosmology. 3.0 Credits.
This course provides an overview of modern physical cosmology. Topics covered include: the contents, shape, and history of the universe; the big bang theory; dark matter; dark energy; the cosmic microwave background; Hubble’s law; the Friedmann equation; and inflation. Recommended Course Background: AS.171.101-AS.171.102, or AS.171.103-AS.171.104, or AS.171.105-AS.171.106, or AS.171.107-AS.171.108, or equivalent.
Instructor(s): C. Bennett
Area: Natural Sciences.

AS.171.411. Light and Optics. 3.0 Credits.
What is light? How does it propagate and interact with matter? How do we use it to transmit information? How does technology make use of light? This course is designed for majors in physics as well as other science and engineering departments.
Instructor(s): B. Menard
Area: Engineering, Natural Sciences.

AS.171.416. Numerical Methods for Physicists. 4.0 Credits.
Instructor(s): K. Schlaufman
Area: Natural Sciences, Quantitative and Mathematical Sciences.

AS.171.425. Group Theory in Physics. 3.0 Credits.
Introduction to finite and Lie groups, representations and applications to quantum mechanics, condensed matter physics, and other fields of physics; selected topics from differential geometry and algebraic topology. Recommended Prerequisite: AS.171.304
Instructor(s): Y. Li
Area: Natural Sciences.

AS.171.472. Introduction to Plasma Physics & Atomic Processes in Hot Plasmas. 3.0 Credits.
Course will be a combination between an introduction to plasma physics and an overview of the basic atomic processes which determine the properties of hot, laboratory and astrophysical plasmas. Undergraduate students may register online for this course and will be assigned 3 credits during the add/drop period. Co-taught with AS.171.672
Instructor(s): M. Finkenthal
Area: Natural Sciences.

AS.171.501. Independent Research- Undergraduate. 3.0 Credits.
Students may register for independent research with a faculty member in the Department of Physics and Astronomy. A research plan should be sent to the Director of Undergraduate Study before the add/drop date that includes project details, the number of hours of effort each week and the number of credits. This course may not be used for one of the two electives required for a BA, but one semester of research may be used as one of four focused electives in a BS program.
Instructor(s): Staff.

AS.171.502. Undergraduate Independent Research. 0.0 - 3.0 Credits.
Research done in senior year in conjunction with experimental equipment intermediate laboratory or as special project in research group. Credit for independent study given to junior and senior students who act as tutors.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): Staff.

AS.171.503. Senior Thesis. 3.0 Credits.
Preparation of a substantial thesis based upon independent student research, supervised by at least one faculty member in Physics and Astronomy. This course may only be taken for credit during one semester. However, students are expected to have engaged in their research project during previous semesters through 171.501-502, summer research, etc. This course may not be used as one of the two electives required for a BA, but can be used as one of the four focused electives in a BS program. Open to senior department majors only.
Instructor(s): N. Markovic; R. Wyse; T. Marriage
Writing Intensive.

AS.171.504. Senior Thesis. 0.0 - 3.0 Credits.
Preparation of a substantial thesis based upon independent student research, supervised by at least one faculty member in Physics and Astronomy.
Instructor(s): M. Kamionkowski; O. Tchernyshyov; R. Leheny; T. Marriage
Writing Intensive.

AS.171.595. Internship. 1.0 Credit.
Instructor(s): Staff.

AS.171.597. Independent Research. 3.0 Credits.
Instructor(s): Staff.

AS.171.603. Electromagnetic Theory.
Theory of the Maxwell equations, with static and dynamic applications, boundary-value problems, guided and free waves, diffraction, scattering, special relativity, electron theory.
Instructor(s): J. Krolik.

AS.171.605. Quantum Mechanics.
Review of wave mechanics and the Schrodinger equation, Hilbert space, harmonic oscillator, the WKB approximation, central forces and angular momentum, scattering, electron spin, density matrix, perturbation theory (time-independent and time-dependent), quantized radiation field, absorption and emission of radiation, identical particles, second quantization, Dirac equation.
Instructor(s): O. Tchernyshyov.

AS.171.606. Quantum Mechanics.
Review of wave mechanics and the Schrodinger equation, Hilbert space, harmonic oscillator, the WKB approximation, central forces and angular momentum, scattering, electron spin, density matrix, perturbation theory (time-independent and time-dependent), quantized radiation field, absorption and emission of radiation, identical particles, second quantization, Dirac equation. Recommended Course Background: AS.171.303 and AS.171.304
Instructor(s): I. Bah.
Topics in applied mathematics used by physicists, covering numerical
methods: linear problems, numerical integration, pseudo-random
numbers, finding roots of nonlinear equations, function minimization,
eigenvalue problems, fast Fourier transforms, solution of both ordinary
and partial differential equations. Undergraduate students may register
online for this course and will be assigned 3 credits during the add/drop
period.
Instructor(s): K. Schlaufman.

AS.171.611. Stellar Structure and Evolution.
Basic physics of stellar structure and evolution will be discussed with
emphasis on current research.
Instructor(s): E. Vishniac.

AS.171.612. Interstellar Medium and Astrophysical Fluid Dynamics.
Instructor(s): C. Norman.

AS.171.613. Radiative Astrophysics.
A one-term survey of the processes that generate radiation of
astrophysical importance. Topics include radiative transfer, the theory
of radiation fields, polarization and Stokes parameters, radiation from
accelerating charges, bremsstrahlung, synchrotron radiation, thermal
dust emission, Compton scattering, properties of plasmas, atomic
and molecular quantum transitions, and applications to astrophysical
observations.
Instructor(s): D. Neufeld.

AS.171.618. Observational Astronomy.
How do we observe the Universe at each wavelength and what do we
see? This course will present the knowledge required for astronomical
observations across the entire spectrum. For each wavelength range
(gamma rays, X-rays, UV, visible, IR, radio) we will discuss the type of
detector used, the range of possible observations and current open
questions. We will also discuss the dominant astronomical and terrestrial
sources across the spectrum, and study the differences between ground-
and space-based observations.
Instructor(s): B. Menard.

an advanced graduate level course that emphasizes the importance of
molecules in astrophysical environments as diverse as interstellar clouds,
circumstellar outflows, cometary comae, and active galactic nuclei.
Topics will include the chemistry and photochemistry of astrophysical
molecules; molecular excitation; astrophysical masers; interstellar
molecular clouds; interstellar shock waves; circumstellar outflows;
cometary comae; molecular accretion disks.
Instructor(s): D. Neufeld.

This sequence is intended for graduate students in physics and related
fields. Topics include superconductivity, magnetism, metal-insulator
transitions, low dimensional materials, quantized hall effect.
Instructor(s): C. Broholm.

AS.171.625. Experimental Particle Physics.
For graduate students interested in experimental particle physics, or
theory students, or students from other specialties. Subjects covered:
experimental techniques, including particle beams, targets, electronics,
and various particle detectors; and a broad description of high energy
physics problems. Undergraduate students may register online for this
course and will be assigned 3 credits during the add/drop period.
Instructor(s): A. Gritsan.

AS.171.627. Astrophysical Dynamics.
This is a graduate course that covers the fundamentals of galaxy
formation, galactic structure and stellar dynamics and includes topics in
current research.
Instructor(s): C. Norman.

AS.171.629. First Year Research.
Instructor(s): P. Maksimovic.

AS.171.630. First Year Research.
Instructor(s): P. Maksimovic; R. Wyse.

Introduction to finite and Lie groups, representations and applications
to quantum mechanics, condensed matter physics, and other fields
of physics; selected topics from differential geometry and algebraic
topology.
Instructor(s): Y. Li
Area: Natural Sciences.

AS.171.641. Second Year Research.
Instructor(s): P. Maksimovic.

AS.171.642. Second Year Research.
Instructor(s): P. Maksimovic; R. Wyse.

AS.171.644. Exoplanets and Planet Formation.
A graduate-level introduction to the properties of the solar system, the
known exoplanet systems, and the astrophysics of planet formation
and evolution. Topics also include the fundamentals of star formation,
protoplanetary disk structure and evolution, exoplanet detection
techniques, and the status of the search for other Earths in the Galaxy.
Upper-level undergraduates may enroll with the permission of the
instructor.
Instructor(s): K. Schlaufman.

AS.171.646. General Relativity.
An introduction to the physics of general relativity. Principal topics are:
physics in curved spacetimes; the Equivalence Principle; the Einstein
Field Equations; the post-Newtonian approximation and Solar System
tests; the Schwarzschild and Kerr solutions of the Field Equations and
properties of black holes; Friedmann solutions and cosmology; and
gravitational wave propagation and generation.
Instructor(s): D. Kaplan
Area: Natural Sciences.

Cells are actively-driven soft materials — but also efficient sensors and
information processors. This course will cover the physics of those
cellular functions, from the mechanics of DNA to the sensing of chemical
signals. Questions answered include: How does polymer physics limit
how quickly chromosomes move? Why do cells use long, thin flagella to
swim? What limits the accuracy of a cell’s chemotaxis? Some experience
with partial differential equations required. No biology knowledge beyond
the high school level necessary. Some problem sets will require minimal
programming.
Instructor(s): B. Camley
Area: Natural Sciences.
Course will be a combination between an introduction to plasma physics and an overview of the basic atomic processes which determine the properties of hot, laboratory and astrophysical plasmas. Undergraduate students may register online for this course and will be assigned 3 credits during the add/drop period. Co-taught with AS.171.472
Instructor(s): M. Finkenthal.

AS.171.697. Astro-Particle Physics.
Topics include: Dark matter, dark energy, ultra-high energy cosmic rays, neutrino astrophysics, black holes, WIMPS, sterile neutrinos, axions, gamma ray bursts, particle acceleration, cosmic backgrounds, dark energy equation-of-state. Senior undergraduates with permission.
Instructor(s): O. Tchernyshyov.

This multidisciplinary course explores the origins of life, planets’ formation, Earth’s evolution, extrasolar planets, habitable zones, life in extreme environments, the search for life in the Universe, space missions and planetary protection. Graduate students only. Meets with AS.171.333.
Instructor(s): C. Norman.

AS.171.701. Quantum Field Theory.
Introduction to relativistic quantum mechanics and quantum field theory. Canonical quantization; scalar, spinor, and vector fields; scattering theory; renormalization; functional integration; spontaneous symmetry breaking; Standard Model of particle physics.
Instructor(s): M. Kamionkowski.

AS.171.702. Quantum Field Theory II.
Introduction to relativistic quantum mechanics and quantum field theory. Recommended Course Background: AS.171.605-AS.171.606 or equivalent.
Instructor(s): M. Kamionkowski.

AS.171.703. Advanced Statistical Mechanics.
Brief review of basic statistical mechanics and thermodynamics. Then hydrodynamic theory is derived from statistical mechanics and classical treatments of phase transitions, including Ginzburg-Landau theory.
Instructor(s): R. Leheny.

Course covers phase transitions and critical phenomena. Building on the ideas of spontaneous symmetry breaking and scale invariance at a critical point we develop Landau’s theory of phase transitions and the apparatus of renormalization group using both analytic and numerical techniques for studying interacting systems.
Instructor(s): O. Tchernyshyov.

AS.171.732. Elementary Particle Physics.
Description TBA
Instructor(s): M. Swartz.

AS.171.750. Cosmology.
Review of special relativity and an introduction to general relativity, Robertson-Walker metric, and Friedmann equation and solutions. Key transitions in the thermal evolution of the universe, including big bang nucleosynthesis, recombination, and reionization. The early universe (inflation), dark energy, dark matter, and the cosmic microwave background. Development of density perturbations, galaxy formation, and large-scale structure.
Instructor(s): C. Norman.

Introduction to the use of neutron scattering techniques to probe atomic scale structure and dynamics of hard condensed matter. Subjects covered include basic theory of nuclear and magnetic neutron scattering, neutron sources and instrumentation, polarized neutrons, Larmor labeling, structural refinement methods, surfaces and interfaces, group theoretical analysis of magnetic structures, phonons, magnetic excitations, and critical phenomena.
Prerequisites: AS.171.621 OR AS.171.622
Instructor(s): C. Broholm.

AS.171.752. Black Hole Astrophysics.
Black holes are the central engines for a wide variety of astrophysical objects: Galactic X-ray sources, active galactic nuclei, stellar tidal disruptions, and the black hole mergers that are the only directly-detected gravitational wave sources (as of this writing). Although the mass distribution of astrophysical black holes spans at least eight orders of magnitude and their circumstances can vary tremendously, the physical processes relevant to them are often closely related. This class will present the most important of them: relativistic orbits; accretion dynamics, the structure of accretion flows, and their radiation mechanisms; relativistic jet launching; binary black hole dynamics and gravitational wave radiation.
Instructor(s): J. Krolik.

AS.171.753. String Theory.
Instructor(s): I. Bah
Area: Natural Sciences.

AS.171.755. Fourier Optics and Interferometry in Astronomy.
A course for advanced undergraduate and beginning graduate students covering the principles of optics and image formation using Fourier Transforms, and a discussion of interferometry and other applications both in radio and optical astronomy.
Instructor(s): R. Allen.

This course is designed for graduate students interested in learning the language, techniques, and problematic of modern quantum many-body theory as applied to condensed matter physics.
Instructor(s): Y. Li.

AS.171.783. Black Hole Physics.
General Relativity predicts its own demise in the existence of singular black hole solutions. There have been mounting astrophysical evidence that black holes do exist in nature. Thus they are not just pathologies of the theory but fundamental objects in gravity that require understanding. Theoretically, they serve as "laboratories" for studies in quantum gravity; indeed, most of the research in the field aims to resolve various paradoxes and puzzles that emerge when one tries to understand physics inside or outside black holes. The goal of this course is to elucidate these paradoxes and puzzles. First, we will study the classical properties of black holes in general relativity such as horizons, causal history, singularity theorems, area theorems and black hole mining. Next, we will study semi-quantum and quantum properties such as black hole thermodynamics, Hawking radiation, black hole evaporation. We will also explore modern results and perspectives on the fundamental physics of black holes that are necessary for current research. A background in general relativity and quantum field theory is recommended for the course.
Instructor(s): I. Bah.
AS.171.784. Advanced Particle Theory: What to Expect at the LHC.
The course will focus on scenarios and principles for new particle physics that can be tested at the CERN Large Hadron Collider and other particle experiments.
Instructor(s): D. Kaplan.

AS.171.785. Advanced Particle Theory: Dark Matter.
The overwhelming evidence that dark matter exists and that it is not part of the fundamental theory of matter (the standard model) suggests the need for a graduate course. I will cover what is known and not known about dark matter, being specific enough to open lines of inquiry. I will cover what the rules of quantum field theory would allow it to be and how it could interact with us. I will go over possible mechanisms that explain the generation of dark matter in our universe in the first place. In addition, I will go over the ways to potentially discover (interact with) it directly. The first half or more of the course should be mostly accessible to advanced graduate students in astrophysics and high-energy particle experimentalists. The last half/third will be more field-theory oriented.
Instructor(s): D. Kaplan.

Sec. 03 Swartz, Morris Sec. 04 Chien, Chia-ling Sec. 05 Kamionkowski Sec. 06 Reich Sec. 07 McCandliss Sec. 08 Krolik Sec. 10 Norman Sec. 11 Blumenfeld Sec. 12 Heckman Sec. 14 Szalay Sec. 15 Ford Sec. 16 Drichko Sec. 17 Wyse Sec. 18 Vishniac Sec. 19 Neufeld Sec. 20 Turner Sec. 21 Blair Sec. 22 Robbins Sec. 23 Kaiser Sec. 24 Broholm Sec 25 Bianchi Sec. 26 Zakamska Sec. 27 Kaplan, David Sec. 28 Finkenthal Sec. 29 Leheny Sec. 30 Bae Sec. 31 Tchernyshyov Sec. 32 Bennett Sec. 33 Kaplan, Jared Sec. 34 Gritsan Sec. 35 Armitage Sec. 36 Maksimovic Sec. 37 Riess Sec. 38 Marriage Sec. 39 Menard Sec. 40 McQueen
Instructor(s): Staff.

AS.171.802. Independent Research-Graduate.
Sec. 03 - Swartz, Morris Sec. 04 - Chien, Chia-ling Sec. 05 - Kamionkowski Sec. 06 - Reich Sec. 07 - McCandliss Sec. 08 - Krolik Sec. 10 - Norman Sec. 11 - Blumenfeld Sec. 12 - Heckman Sec. 14 - Szalay Sec. 15 - Ford Sec. 16 - Drichko Sec. 17 - Wyse Sec. 18 - Vishniac Sec. 19 - Neufeld Sec. 20 - Turner Sec. 21 - Blair Sec. 22 - Robbins Sec. 23 - Kaiser Sec. 24 - Broholm Sec. 25 - Bianchi Sec. 26 - Zakamska Sec. 27 - Kaplan, David Sec. 28 - Finkenthal Sec. 29 - Leheny Sec. 30 - Tchernyshyov Sec. 32 - Bennett Sec. 33 - Kaplan, Jared Sec. 34 - Gritsan Sec. 35 - Armitage Sec. 36 - Maksimovic Sec. 37 - Riess Sec. 38 - Marriage Sec. 39 - Menard Sec. 40 - McQueen
Instructor(s): Staff.

AS.172.203. Contemporary Physics Seminar. 1.0 Credit.
This seminar exposes physics majors to a broad variety of contemporary experimental and theoretical issues in the field. Students read and discuss reviews from the current literature, and are expected to make an oral or written presentation. Recommended Course Background: AS.171.101-AS.171.102, AS.171.103-AS.171.104, or AS.171.105-AS.171.106.
Instructor(s): N. Drichko
Area: Natural Sciences.

AS.172.601. Department Colloquium.
Instructor(s): Staff.

A joint JHU Department of Physics and Astronomy and Space Telescope Science Institute Colloquium Series.
Instructor(s): Staff.

Intended for beginning graduate students. Study of the methods and results of modern physics and other topics of interest. Each student will discuss some phase of the subject. Graduate students only.
Instructor(s): Staff.

AS.172.633. Language Of Astrophysics.
Survey of the basic concepts, ideas, and areas of research in astrophysics, discussing general astrophysical topics while highlighting specialized terms often used compared to physics.
Instructor(s): E. Vishniac.

During the Spring 2015 Planets Life and the Universe Seminar, we will read and discuss classic papers and (later in the semester) frontier research on the fundamental issues concerning the Origin of Life on our planet Earth and Exoplanets in general. The recent Kepler mission has now shown that are typical earth-like planets around every typical star in the Universe-- giving almost Avagadro's number of earthlike planets in our Universe. The study of Life in the Universe consequently becomes an observational science. The intellectual framework underpinning these endeavors becomes one of the central intellectual issues of our age (possibly any age!). We will have relaxed and enjoyable discussions of these topics on Friday afternoons. At times mathematical and physics based fluency will be useful. Recommended Course Background: AS.171.333/AS.171.699 or AS.020.334/AS.020.616
Instructor(s): Staff.

AS.172.722. Hot Topics in Astrophysics.
Instructor(s): C. Chien.

AS.172.731. CAS Research Seminar.
Instructor(s): S. McCandliss.

AS.172.732. CAS Research Seminar.
Instructor(s): S. McCandliss.

Instructor(s): Staff.

AS.172.751. Elementary Particle Physics Seminar.
Instructor(s): Staff.

AS.172.752. Elementary Particle Physics Seminar.
Instructor(s): P. Maksimovic.

AS.172.753. Advanced Particle Theory Seminar.
Instructor(s): Staff.

AS.172.754. Advanced Particle Theory Seminar.
Instructor(s): J. Kaplan.

Instructor(s): Staff.

Instructor(s): N. Armitage.

AS.173.111. General Physics Laboratory I. 1.0 Credit.
Experiments are chosen from both physical and biological sciences and are designed to give students background in experimental techniques as well as to reinforce physical principles. Corequisite: AS.171.101, AS.171.103, or AS.171.105.
Instructor(s): C. Chien; J. Mumford
Area: Natural Sciences.
AS.173.112. General Physics Laboratory II. 1.0 Credit.
Experiments are chosen from both physical and biological sciences and are
designed to give students background in experimental techniques as well as to reinforce physical principles. Recommended Course
Background: AS.173.111; Corequisite: AS.171.102.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class; AS.171.101 OR AS.171.102 OR AS.171.104 OR
AS.171.106 OR AS.171.108
Corequisites: AS.171.102
Instructor(s): J. Mumford
Area: Natural Sciences.

AS.173.115. Classical Mechanics Laboratory. 1.0 Credit.
Experiments chosen to complement the lecture course Classical Mechanics I, II AS.171.105-AS.171.106 and introduce students to experimental techniques and statistical analysis. Corequisite: AS.171.105.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Chien; J. Mumford
Area: Natural Sciences.

AS.173.116. Electricity and Magnetism Laboratory. 1.0 Credit.
Experiments chosen to complement Electricity and Magnetism
AS.171.106 and introduce students to experimental techniques and statistical analysis.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Chien; J. Mumford
Area: Natural Sciences.

AS.173.125. Understanding the World through Physics: An experimental approach. 3.0 Credits.
Students will learn key concepts of everyday physics through experimentation. They will design, build, and run experiments themselves. The course will be graded on participation and a graded final presentation.
Instructor(s): M. Valdivia Leiva
Area: Natural Sciences.

AS.173.308. Advanced Physics Laboratory. 3.0 Credits.
A broad exposure to modern laboratory procedures such as holography, chaos, and atomic, molecular, and particle physics.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): T. Marriage
Area: Natural Sciences
Writing Intensive.

AS.173.311. Mentoring in General Physics Laboratory. 1.0 Credit.
This course provides students who have take General Physics I and II and General Physics Laboratory I and II with the opportunity to mentor new students in General Physics Laboratory I and II. Mentors collaborate General Physics laboratory Teaching Assistants to interact with students to help them to complete laboratory assignments and to master the concepts of General Physics. Mentors must have a strong background in Physics. They are expected to interact with students during one three-hour laboratory section per week and to attend the associated TA training once per week. Permission of the instructor required. S/U only.
Prerequisites: AS.173.111 and AS.173.112; Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. Mumford
Area: Natural Sciences.

AS.173.312. Mentoring in General Physics Laboratory. 1.0 Credit.
This course provides students who have to take General Physics I and II and General Physics Laboratory I and II with the opportunity to mentor new students in General Physics Laboratory I and II. Mentors collaborate General Physics laboratory Teaching Assistants to interact with students to help them to complete laboratory assignments and to master the concepts of General Physics. Mentors must have a strong background in Physics. They are expected to interact with students during one three-hour laboratory section per week and to attend the associated TA training once per week. Permission of the instructor required. S/U only.
Prerequisites: AS.173.111 AND AS.173.112; Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Chien
Area: Natural Sciences.

AS.173.608. Advanced Laboratory.
Experiments carried out on cosmic rays, X-ray scattering Mössbauer effect, atomic beams, and optical spectroscopy.
Instructor(s): T. Marriage.

Cross Listed Courses
Chemistry
The course is designed to provide the essential principles and concepts underlying the modern study of the structure and properties of solids in bulk crystals, thin films, and nanoscale objects. Topics include basic crystallography, structure determination by x-ray, neutron, and electron diffraction, fundamental concepts of bonding in solids, lattice dynamics, electronic band structure, magnetism, and strongly correlated electron behavior. Particular emphasis is placed on the impact of the structure, dimensionality, and electron count on electrical and magnetic properties (electric conduction, superconductivity, thermoelectricity, etc). More course info available at <a href="http://occamy.chemistry.jhu.edu">http://occamy.chemistry.jhu.edu</a>.
Instructor(s): T. Mcquean.

Applied Mathematics Statistics
EN.553.793. Turbulence Theory. 3.0 Credits.
An advanced introduction to turbulence theory for graduate students in the physical sciences, engineering and mathematics. Both intuitive understanding and exact analysis of the fluid equations will be stressed. Previous familiarity with fluid mechanics is not required, although it could be helpful.
Instructor(s): G. Eyink.

Political Science
http://politicalscience.jhu.edu

The programs of the Political Science Department are designed to help students attain a deeper understanding of politics and civic life in its various dimensions. The department encourages students to become sophisticated theoretically and to study politics in global and comparative perspective. We divide the curriculum into American Politics, Comparative Politics, Political Theory, and International Relations (and Law and Politics at the graduate level). Students are encouraged to develop expertise in several of these areas.
The department has 26 faculty members. The undergraduate program offers a broad range of courses about politics and government at local, state, national, and international levels. In addition to taking courses on the Homewood campus, students can do independent research under the guidance of a faculty mentor, take courses at the Nitze School of Advanced International Studies (SAIS) in Washington, D.C., and
participate in the Aitchison Public Service Undergraduate Fellowship Program at the Johns Hopkins Washington Center.

**Intellectual Orientation**
In addition to our work within the traditional fields of Political Science, faculty research engages four clusters of activity that cut across the various subfields while speaking to core questions of politics: power and inequality, identities and allegiances, agency and structures, and borders and flows.

**Power and Inequality**
In many ways, political science is the study of power. This includes the wide array of rules, authority structures, and forms of violence at the local, national, transnational and international levels, as well as how the value, distribution, and accumulation of resources create conditions of security and insecurity among nation states, regions, economic classes, or populations.

**Identities and Allegiances**
A second cluster of research centers on questions of identity and the various allegiances and attachments organized around them. These include how racial, ethnic, gender, and sexual identities inform citizenship and nationalism, the organization of civil society, or the formation of social movements.

**Agency and Structure**
A third cross-cutting area of activity in the department explores questions of agency and structures. Agency includes entrepreneurship, innovation and creative action, and the agency of material things. Structures include formal and informal institutions, particularly the rules, roles, and regulations that guide human relations in the public, private, and non-profit worlds, among states and within them, at the global level and in local communities.

**Borders and Flows**
A fourth cluster examines borders and flows. Research in this area examines the movement of people, ideas, material objects, and natural forces across space and over time. A focus on borders and flows informs the study of territorial regimes, sovereignty, religious intensities, immigration and diasporas, globalizing capital, information, and ecological politics.

**Undergraduate Programs**
Political Science courses can contribute to two different majors:

**Major in Political Science**
The major in political science described below is designed for students interested in intensive study of the institutions, theory, and problems of politics, government and modern political culture.

**Major in International Studies**
The department contributes to an interdisciplinary program leading to B.A. or B.A./M.A. degrees in International Studies. This program and its requirements are described under International Studies (p. 402).

**Requirements for the B.A Degree**
(See also Requirements for a Bachelor’s Degree (p. 7).)

The requirements for the political science major listed below apply to those students who entered the University in Fall 2014 and later. Students who entered prior to Fall 2014 should refer to the archived catalog (http://web.jhu.edu/registrar/catalog) based on their year of entry into the institution. All courses applied towards the major must be taken for a letter grade and students must receive a grade of C or higher, including courses taken in the first semester of freshman year. A maximum of four courses may come from transfer credit and only one letter-graded independent study of 3 credits may apply towards the major (unless honors thesis). The Department of Political Science does not award credit toward the major for the Advanced Placement Exam in government.

**Subfield Courses**
- One 100- or 200-level course in American Politics (AP) 3
- One 100- or 200-level course in Comparative Politics (CP) 3
- One 100- or 200-level course in International Relations (IR) 3
- One 100- or 200-level course in Political Theory (PT) 3

**Writing Intensive Course**
One 3-credit writing intensive course in political science. This course may overlap with one of the 12 required political science courses and with the the four required KSAS writing-intensive courses.

**Political Science Elective Courses**
- One political science course at any level 3
- Seven political science courses at the 300- or 400-level 21

**Cognate Courses**
Four elective courses (at any level) selected from the following areas: history, history of art, history of science & technology, philosophy, anthropology, geography, economics, sociology, or psychology 12

**Sample Program of Study**

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<thead>
<tr>
<th>Freshman</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>1 American Politics Course</td>
<td>3</td>
<td>1 Comparative Politics Course</td>
<td>3</td>
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<tr>
<td>Cognate #1</td>
<td>3</td>
<td>Cognate #2</td>
<td>3</td>
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<tr>
<th>Sophomore</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>1 International Relations Course</td>
<td>3</td>
<td>1 Political Theory Course</td>
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<tr>
<td>Cognate #3</td>
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<td>Cognate #4</td>
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<tr>
<th>Junior</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>1 Political Science Course at any level</td>
<td>3</td>
<td>Upper Level Political Science Course #2</td>
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<tr>
<td>Upper Level Political Science Course #1</td>
<td>3</td>
<td>Upper Level Political Science Course #3</td>
<td>3</td>
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<tr>
<th>Senior</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Upper Level Political Science Course #4</td>
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<td>Upper Level Political Science Course #5</td>
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<td>3</td>
<td>Upper Level Political Science Course #7</td>
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World Politics and Global Governance Double Major

The World Politics and Global Governance (WPGG) (http://politicalscience.jhu.edu/undergraduate/world-politics-and-global-governance-double-major) program offers an intellectually rigorous path for students who want to understand world politics from a broad interdisciplinary perspective. Completing this course of study satisfies the requirements for a double major in political science and international studies. Students take courses from one of five different thematic foci: Global governance and law; Political economy; International security; Borders and identities; Environmental politics. The WPGG program enables students to develop their analytical skills and their critical judgment as citizens of the world. The program provides excellent preparation for professional careers as well as for graduate studies in political science, public affairs, law, business, and beyond. http://politicalscience.jhu.edu/undergraduate/world-politics-and-global-governance-double-major/

Honors Thesis Program

Seniors may choose to write a senior research thesis. To be eligible to write this thesis, seniors must have taken at least one research-focused political science course (R) in their junior year (senior year with special permission). After the student has obtained approval from a faculty sponsor to supervise the project, the student will enroll in a three-credit thesis colloquium course during the fall semester of their senior year. If at the end of the fall semester adequate progress has been made and the project warrants further work, the student must enroll in a three-credit independent study supervised by the faculty sponsor.

Students who complete a distinguished senior thesis with a grade of A- or better and have a final major GPA (including final semester grades) of 3.7 will be awarded departmental honors. All students may choose to write a thesis, regardless of GPA, provided they have a detailed proposal approved by a faculty member at the beginning of the fall semester of their senior year.

All thesis-related courses apply to the total of twelve (12) political science courses required for graduation in the major.

Graduate Programs

The Johns Hopkins University Department of Political Science has built an international reputation for its strengths in theory and in innovative and trans-disciplinary approaches to uncovering novel connections. The program of doctoral study draws on these strengths to provide a diverse and rigorous doctoral education. Our program is designed for highly qualified, intellectually curious, and creative graduate students who seek to learn from and contribute to this community of scholars.

Doctoral students develop in-depth knowledge of a major field and a minor field (or two major fields), chosen from American politics, comparative politics, international relations, law and politics, and political theory. Students may also complete a certificate in comparative racial politics. All doctoral students have opportunities to work closely with faculty, to pursue independent research, and to draw on the deep connections between Political Science and other departments across the humanities and social sciences.

Both the Department and the Krieger School of Arts and Sciences provide opportunities for developing teaching and other career-related skills, all in the vibrant setting of the Homewood campus and Baltimore city.

Admission

The Department of Political Science admits approximately 16 new graduate students each year, selected from approximately 200 applications. Our entering class is typically around 10 students. The deadline for application for admission to graduate study and the award of financial assistance is January 15 (most years). Decisions are made exclusively in late February or early March and announced by March 15. A B.A., B.S., or their equivalent, and results of the Graduate Record Examination are required for application. Students whose native language is not English must take the TOEFL examinations or provide other evidence of fluency in English (such as a degree from an institution in which the language of instruction is English.) A broad background in the liberal arts and sciences is preferred. Further information can be found at http://grad.jhu.edu/apply/application-process/.

Financial Aid

The department ordinarily provides financial aid to all students admitted to the graduate program unless they hold fellowships from sources outside the university. Departmental fellowships cover full tuition and an annual stipend. Assuming satisfactory progress toward the Ph.D., students can normally expect to receive funding for five years. All students receiving financial aid are expected to serve as teaching assistants for one semester of each academic year.

Requirements for the Ph.D. Degree

The requirements for the Ph.D. are divided between those that must be satisfied by all candidates for that degree and those particular to the student’s major and minor fields.

Department-wide Requirements

All candidates for the Ph.D. must satisfy the following requirements:

Course Requirements

A minimum of 12 semester courses at the 600-level with a grade of B or better. At least 10 of these must be in the Krieger School’s Department of Political Science.

Foreign Language Requirement

All students must demonstrate proficiency in a foreign language. This requirement can be fulfilled as follows:
1. Demonstrate fluency in a foreign language (granted automatically for students whose first language is not English).
2. Complete four semesters of college-level foreign language instruction.
3. Pass a translation exam.
4. Earn a degree from a University where instruction is not in English.
5. With a degree from an institution in which the language of instruction is a language other than English.
6. Place into a third-year foreign language course through online placement tests (see GRLL website).

Comprehensive Examination Requirement

Students are required, at a minimum, to take comprehensive exams in one major field and one minor field. Students may also elect to take
two major exams or a major exam and two minor exams (one of which may be outside the Department of Political Science). Faculty in the field write and evaluate the exams and determine the format. Major field comprehensive exams take place over two days (8 hours per day); minor field exams take place over one day. The fields within the department are: American Politics, Law and Politics, Political Theory, Comparative Politics and International Relations.

Students choosing a second minor outside the Political Science Department must devise a coherent program of study in that discipline, in consultation with their Political Science faculty advisor and with faculty from the other department. Students choosing an external minor must complete a minimum of three courses at the 600 level in the external minor’s discipline, earning a grade of B or better. They must also pass a comprehensive examination prepared and evaluated in consultation with faculty of the Department of Political Science by the instructors in those courses.

Dissertation
The dissertation is the capstone of doctoral education, and it must be a substantial work of independent scholarship that contributes to knowledge in the student’s field of study. Preparation of the dissertation will be supervised and must be approved by two members of the faculty, at least one of whom (the dissertation director) must be a member of the Department of Political Science.

Defense
The final examination of the dissertation will take the form of a defense conducted under the rules of the Graduate Board of The Johns Hopkins University.

Field-specific requirements
Field-specific basic expectations, procedures, and requirements are stated below. These are implemented, interpreted, and adjusted in the light of the intellectual orientations and objectives of individual students. It is of great importance that students work closely with their advisors and with the faculty in their major and minor fields in constructing and pursuing their programs of study.

American Politics
Students majoring and minoring in American Politics will work with at least two faculty members to develop a plan of study that includes recommended course work and other preparation needed to pass a comprehensive exam. Students completing a major are expected to demonstrate a breadth of knowledge sufficient for framing a dissertation in the relevant disciplinary literature and teaching undergraduate courses in the field; students who pursue a minor may focus more narrowly on an area of study in which they demonstrate fluency. These may include, but are not limited to, the following areas of faculty interest:

- American Political Institutions (Congress, Courts, and the Executive)
- Urban Politics
- American Political Development
- Race and Politics
- Political Behavior and Public Opinion
- Public Policy
- American Political Thought
- Political Parties and Elections

In addition, students majoring in the field are strongly encouraged to take AS.190.602 Introduction to Quantitative Political Science as part of their course of study.

Comparative Politics
All students majoring and minoring in this Comparative Politics will become conversant with major substantive and methodological debates in the field, and be able to comment on the key theoretical literature in several of those debates. They will normally also develop knowledge of at least one world region. Students majoring or minoring in Comparative Politics are required to take AS.190.625 Theories of Comparative Politics and at least one seminar in quantitative or qualitative methods. We expect all students to master the material covered in these courses, as well as others with more specialized topics.

Students will take a comprehensive examination that will test their ability to engage with several areas of theoretical debate in Comparative Politics, and their ability to use comparative examples to support their arguments. Students may focus on (but are not limited to):

- Civil Society
- Institutional Theories
- Transnational Relations, Social Movements, and Contentious Politics
- Political Parties, Interest Groups, Representation, and Political Behavior
- Comparative Political Economy
- Comparative Racial Politics, Nationalism, and Migration and Citizenship
- The Political Economy of Development
- Economic and Political Transitions
- Ideas and Politics

Within the spirit of this division of the overall field, students may propose alternative delineations of thematic subfields.

Students working in specific thematic and substantive subfields within Comparative Politics will be required to demonstrate competence in methodologies and bodies of theory judged by the faculty to be necessary for quality research and teaching in those subfields.

International Relations
All students majoring or minoring in International Relations will be required to be conversant with the major theoretical, substantive, and methodological themes and debates of the field. It is strongly recommended that students take As 190.676 Field Survey of International Relations and a methods course. Students majoring in International Relations will take an examination covering two subfields. The first subfield must be International Politics. The other subfield is to be determined in consultation with faculty teaching International Relations. Choices include but are not restricted to:

- International Law and Diplomacy
- International Relations Theory
- International Security Studies
- Science, Technology, and Art and International Relations
- Global Political Economy

Students minoring in International Relations will take a comprehensive examination in International Politics.
Political Theory

Students majoring in Political Theory will take a comprehensive examination covering the following two subfields:

- Contemporary Political Theory
- History of Political Thought

Each student preparing for a major comprehensive exam will propose six or seven thinkers in the history of thought, six or seven recent or contemporary thinkers, and three or four issue areas. Examination questions are composed in light of the theorists and issues articulated in the exam prospectus.

The minor comprehensive exam in political theory asks the student to select half the number of thinkers required for the major exam and three issue areas.

Preparation for these examinations will be arranged in consultation with relevant faculty.

Students majoring in political theory will also take at least one minor field from American Politics, Law and Politics, Comparative Politics, or International Relations.

Law and Politics

Law and Politics focuses on American constitutional thought, judicial politics, law and society, and philosophy of law and jurisprudence. Students learn not only about the history and context of American constitutional developments but also about the operation of the judicial branch of government in the past and the present, how courts and judges do their work, and how that work has changed. In addition, students explore how legislation as well as course decisions reflect and influence groups, and professional networks help to shape law’s content and implementation. Students may major or minor in Law and Politics. in either case, students work closely with at least two members of the faculty to develop a plan of study regarding coursework and additional reading to prepare them for comprehensive exams. Majors are expected to demonstrate a breadth of knowledge in the field sufficient for framing a dissertation and for teaching undergraduate courses; minors may focus more narrowly on a particular area of study.

Certificate in Comparative Racial Politics

The graduate certificate program in Comparative Racial Politics is designed to help train graduate students who are developing empirically based and/or theoretically informed scholarship on citizenship, racism and immigration in contemporary societies, whether in a single national society or cross-spatially. There are two required courses: Comparative Racial Politics, and Qualitative Methods. In addition the student must take two electives from this (preliminary) list:

- Nationalism
- Comparative Citizenship and Immigration
- Politics
- Topics in Black Political Thought
- Race and Political Theory
- Civil Society
- States, Regimes and Governmentality
- American Political Development
- Political Economy of Development

Progress Toward the Ph.D.

The time necessary to obtain a Ph.D. in the department varies according to the preparation individual students bring to the program, the scope and complexity of their dissertation topics, and other factors. Students are required to make satisfactory progress, meaning that they must work toward fulfilling the requirements in a timely manner. Students are encouraged to satisfy the department’s foreign language requirement by the time of their first comprehensive exam. Most students take their comprehensive examinations in the third year in the program. Students who have completed all requirements except the dissertation must work to complete their dissertations as quickly as is reasonable given the unique circumstances of their course of study, and they must periodically demonstrate progress on the dissertation.

The Master of Arts degree is offered only to students who have been admitted into the Ph.D. program. For the M.A., the student must complete at least seven one-semester courses at the 600-level with a grade of B or better, and demonstrate an effective reading knowledge of one approved foreign language.

For current faculty and contact information go to http://politicalscience.jhu.edu/people/

Faculty

Chair
Adam Sheingate
American Politics, Comparative Politics

Professors
Adam Sheingate
American Politics, Comparative Politics
Samuel Chambers
Political theory, cultural politics
Jane Bennett
Political theory, American political thought, ecophilosophy.
William E. Connolly
Krieger-Eisenhower Professor: political theory, international relations.
Steven R. David
International relations, security studies, comparative politics.
Benjamin Ginsberg
David Bernstein Professor and Director of the Washington Center for the Study of Government: American government and politics, political development.
Richard Katz
Comparative Politics (parties, elections, European politics), American Politics
Robert Lieberman
Krieger-Eisenhower Professor: American Politics
Renée Marlin-Bennett
International relations, political economy of information.
Robert Shilliam
International Relations

Associate Professors
Adria Lawrence
Aronson Associate Professor of International Studies and Political Science: Comparative politics, Middle Eastern and North African politics, colonialism, nationalism, conflict and collective action

Vesla Weaver
Bloomberg Distinguished Associate Professor and Assistant Research Professor: American Politics

Erin Chung
Charles D. Miller Associate Professor of East Asian Politics and co-director of the Racism, Immigration and Citizenship Program: comparative politics, East Asian politics, international migration, comparative racial politics.

Jennifer L. Culbert
Political theory, jurisprudence.

Daniel H. Deudney
International relations, political theory.

Nicolas Jabko
Comparative politics, international political economy, European politics.

Lester Spence
Black politics, race and politics, urban politics, American political behavior and public opinion.

Steven Teles
Social policy, law and public policy, political analysis.

Assistant Professors
Sarah Parkinson
Aronson Assistant Professor of Political Science and International Studies: Comparative politics, political violence, Middle East and North African politics, social network theory, qualitative methods, refugees

Bentley Allan
International relations, science and politics, global governance, global environmental politics.

P. J. Brendese
Political theory, comparative political thought, race and politics.

Sebastian Mazzuca
Political Economy, Comparative Politics, Latin American Politics and Economy

Daniel Schlozman
American politics, political parties, and the welfare state.

Sebastian Schmidt
International Relations, Security Studies

Emily Zackin
Constitutional law, American politics.

Professors Emeriti
Joseph Cooper
Legislative politics, executive-legislative relations, institutional theory.

Matthew A. Crenson
Urban government, American political development.

Joel B. Grossman
Constitutional law, law and politics, American politics.

Margaret Keck
Comparative politics, international relations (Latin American politics, the environment, social movement)

Adjunct Faculty
Robert Freedman
Arab-Israeli politics and Russian politics.

Lecturer
Matthew Kocher
Comparative Politics, International Relations, and Political Methodology

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.190.101. Introduction to American Politics. 3.0 Credits.
This course examines the ideals and operation of the American political system. It seeks to understand how our institutions and politics work, why they work as they do, and what the consequences are for representative government in the United States. Emphasis is placed on the federal government and its electoral, legislative, and executive structures and processes. As useful and appropriate, attention is also given to the federal courts and to the role of the states. The purpose of the course is to understand and confront the character and problems of modern government in the United States in a highly polarized and plebiscitary era.
Instructor(s): R. Lieberman
Area: Social and Behavioral Sciences.

AS.190.102. Introduction To Comparative Politics. 3.0 Credits.
To understand politics, the sound bites of the modern media take us only so far. In this course, we will take a step back and implement an intellectually rigorous method. Scholars of comparative politics use the method of comparison in order to illuminate important political phenomena of our times. Following this method, we will embark on a scholarly tour of the world and compare the politics of various countries. We will also trace these politics back to their historical sources. We will work from the assumption that there is something to be gained from such comparisons across space and time.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.108. Freshmen Seminar: The Human Condition. 3.0 Credits.
This freshman seminar will focus on reading just one book, The Human Condition, by Hannah Arendt. Such a narrow focus is justified by the breadth of topics the book itself discusses and the influence these various discussions have had on modern political thought. Among the various topics that will be studied and talked about are the meaning of the distinctions Arendt makes between “public,” “private,” and “social,” as well as between “labor,” “work,” and “action.” In the course of their studies, students will be challenged to think about the relation of philosophy to politics, the significance of the scientific revolution for public life, the character of contemporary society, and what it means to be “free.” Also, by focusing on just one book, students will have the opportunity to learn how to do the kind of close reading and textual analysis success in college requires. In addition to reading assignments, students will be required to write four short papers.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.109. Politics of East Asia. 3.0 Credits.
This course examines some of the central ideas and institutions that have transformed politics in the contemporary world through the lens of East Asia, focusing on Japan, South Korea, Taiwan, and China. We analyze two enduring themes of classic and contemporary scholarship in comparative politics: development and democracy. The purpose is to introduce students to the various schools of thought within comparative politics as well as to the central debates concerning East Asian politics.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences.

AS.190.110. American Politics in Film. 3.0 Credits.
This class uses film to explore a central question in American politics: what is the relationship between the public and those who endeavor to represent them? Over the course of several weeks, we will address this question by viewing Mr. Smith Goes to Washington, A Face in the Crowd, The Candidate, Wag the Dog, and The Ides of March. We will use these films to discuss how political institutions, the media, and money shape our politics. We will also consider how the representation of politics in film has changed over time.
Instructor(s): A. Sheingate
Area: Social and Behavioral Sciences.

AS.190.111. Introduction to Global Studies. 3.0 Credits.
This course surveys scholarly approaches to processes, relations, institutions, and social structures that cross, subvert, or transcend national borders. The course will also introduce students to research tools for global studies. Students who have taken Contemporary International Politics 190.209 or International Politics 190.104 may not register.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences.

AS.190.204. Ancient Political Thought. 3.0 Credits.
The premise of this course is that a political perspective is tied up with a (meta)physical one, that is to say, with ideas about the nature of Nature and of the status of the human and nonhuman elements within it. How is the universe ordered? Who or what is responsible for it? What place do or should humans occupy within it? How ought we to relate to nonhuman beings and forces? We will read three different responses to such questions and show how they are linked to a particular vision of political life. In the first, the world into which human are born is ordered by gods whose actions often appear inexplicable: Prometheus Bound by Aeschylus, Oedipus the King by Sophocles, and Hippolytus by Euripides will represent this tragic vision of the cosmos. In the second, Plato, in Republic and in Phaedrus, the forces of reason and eros play central and powerful roles. In the third, Augustine of Hippo presents a world designed by a benevolent, omnipotent God who nevertheless has allowed humans a share in their own fate. We end the course with Nietzsche's Birth of Tragedy, which offers a perspective on these three visions of the world – the tragic, the rational, and the faithful – which will help us evaluate them in the light of contemporary political and ecological concerns.
Instructor(s): J. Bennett
Area: Humanities, Social and Behavioral Sciences.

AS.190.205. Capital: The Best Seller. 3.0 Credits.
When Thomas Piketty published _Capital in the Twenty-First Century_ last spring, he made the rounds on talk shows just like a movie star with a new film out, or a rock star with an album about to drop. How is such an “event” possible, and what does it tell us about the book’s subject, capital? This class explores the questions Piketty’s book raises: What is capital? How does it come about, how does it function, and what are its effects?
Instructor(s): S. Chambers
Area: Humanities, Social and Behavioral Sciences.

AS.190.208. The Politics of Music. 3.0 Credits.
This course will provide a critical examination of the role of music in political and social change. We will be especially concerned with the correspondences between musical innovations and their capacities to inspire and shape social movements as their capacity to address to the politics of race and sexuality, radical democratic resistance, etc. We will also explore how music is utilized to advance agendas that are anti-democratic, such as the transnational spread of white supremacist groups, the glorification of violence, and exclusionary nationalism.
Instructor(s): P. Brendese
Area: Humanities, Social and Behavioral Sciences.

AS.190.209. Contemporary International Politics. 3.0 Credits.
An introduction to international politics. Emphasis will be on continuity and change in international politics and the causes of war and peace. The first half of the course will focus on events prior to the end of the Cold War, including the Peloponnesian War, the European balance of power, imperialism, the origins and consequences of WWI and WWII, and the Cold War. The second half will focus on international politics since 1990, including globalization, whether democracies produce peace, the impact of weapons of mass destruction, terrorism, and the prospects for peace in the 21st century. Theories of realism and liberalism will also be considered.
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.217. Introduction to International Relations Theory. 3.0 Credits.
This course is a broad introduction to international relations theory in a format that encompasses lecture and discussion. We will explore mainstream theoretical perspectives and critiques of those perspectives, as well as more recent developments in the field.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences.

AS.190.220. Global Security Politics. 3.0 Credits.
Contemporary and emerging technologies of nuclear (weapons, terrorism, energy) outer space (missiles, missile defense, asteroids), biosecurity (bioweapons, pandemics, terrorism) and cyber (war, spying, surveillance) implications for security, international politics, arms control, and political freedom.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences.
AS.190.226. Global Governance. 3.0 Credits.
Global problems like poverty, financial instability, human rights abuses, and climate change threaten both international order and human well-being. In the absence of a world state, these problems must be addressed by an increasingly complex, transnational network of organizations and social groups. First, we will aim to understand and explain how global problems are governed through detailed case studies of International Organizations and Non-Governmental Organizations such as the United Nations, World Bank, Intergovernmental Panel on Climate Change, Amnesty International and more. Second, we will critically evaluate the successes and failures of these organizations and explore the possibilities for improving democratic governance at the global level.
Instructor(s): B. Allan
Area: Social and Behavioral Sciences.

AS.190.227. U.S. Foreign Policy. 3.0 Credits.
This course will provide and analysis of US foreign policy with a focus on the interests, institutions, and ideas underpinning its development. While the course will offer a broader survey, the emphasis will be on important developments during the Cold War, such as the articulation of containment strategies and nuclear deterrence, and the analysis of contemporary foreign policy questions, including the problems of terrorism and failed states. In addition to security issues, attention will also be paid to significant developments in international trade policy.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences.

AS.190.250. Statistics for Public Policy. 3.0 Credits.
This course is a short, intensive supplement to Thinking Visually About Data, designed to give students a deeper understanding of the basic statistical concepts needed to inform public policy decision-making.
Prerequisites: Cannot enroll in AS.190.250 if you have already taken EN.553.111 OR AS.230.205
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

AS.190.265. Comparative Political Behavior. 3.0 Credits.
An introduction to the study of political behavior, emphasizing electoral behavior in democratic countries.
Instructor(s): R. Katz
Area: Social and Behavioral Sciences.

AS.190.280. Political Persuasion. 3.0 Credits.
An introduction to Euro-American political thought, with a focus on the role of language, rhetoric, and Eros within politics. Texts by Plato, Machiavelli, Hobbes, Walt Whitman, and Emma Goldman.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences.

AS.190.281. Virtue, Labor, and Power (Classics of Political Thought II). 3.0 Credits.
This is not a class in the history of political thought. Instead, it is an opportunity for a selective, circumscribed, but very focused engagement with some of the most powerful and provocative texts in that history. We will read selections from six thinkers (Socrates, Machiavelli, Locke, Marx, Nietzsche, and Foucault), focusing on three themes (Virtue, Labor, and Power). These texts have all profoundly shaped the way we think about politics, and they are texts that resonate with our own political problematics today.
Instructor(s): S. Chambers
Area: Social and Behavioral Sciences.

AS.190.282. Authority and Liberty. 3.0 Credits.
Beginning with Plato, and using Nietzsche's history of metaphysics as a guide, this course serves as an introduction to Euro-American political thought by analyzing the philosophical foundations of political authority. In addition to works by Plato and Nietzsche, readings will include works by Kant, Mill, Hart, and Foucault.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.283. The Politics of Memory (Classics of Political Thought IV). 3.0 Credits.
Was George Orwell right that those who control the past control the future—and those who control the present control the past? This is a course on the politics of memory: how political power shapes what is available to be remembered, the timing, spaces, and occasions of commemoration, and who is permitted to invoke (or disavow) the past. We will engage a range of highly contested works of ancient, modern and contemporary political theory to investigate how the past might haunt present day politics through memories that are conscious and unconscious. The themes we will take up include: the correspondence between memory and freedom; whether we ever be free given that we are creatures endowed with memory; whether it is sometimes politically necessary (or even possible) for people to forget, and what politics of memory emboldens, or threatens, democracy. There are no prerequisites for this course.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.284. Classics of Political Theory: Political Freedom. 3.0 Credits.
This course investigates core questions of what constitutes political freedom, what limits on freedom (if any) should be imposed by authority, and the relationship between freedom, responsibility and political judgment. Spanning texts ancient, modern and contemporary, we shall investigate how power inhabits and invigorates practices of freedom and consent. Among the questions we will consider: Can we always tell the difference between consent and coercion? Are morality and freedom incompatible? Is freedom from the past possible? By wrestling with slavery (freedom’s opposite) we will confront the terrifying possibility that slavery can be both embodied and psychic. If our minds can be held captive by power, can we ever be certain that we are truly free? The political stakes of these problems will be brought to light through a consideration of issues of religion, gender, sexuality, civil liberties, class and race.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences.

AS.190.301. Global Political Economy. 3.0 Credits.
Examines the intersection of politics and economics in global affairs. Focuses on theoretical approaches to global political economy; institutions of governance of the global political economy; flows of goods, services, capital, and information; and transborder problems. Recommended Course Background: AS.190.209
Prerequisites: Not open if you have previously taken AS.190.216
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.302. How to be a Capitalist. 3.0 Credits.
Everyone usually assumes that they know what capitalism is and how it works. Yet some of us often make very poor choices given the framework of a capitalist system, and many of us continually express shock and outrage over outcomes and results that are perfectly reasonable (and to be expected) given the operation of capitalism. This advanced seminar will engage with readings in political theory and political economy that explore the fundamental logic of capitalism. Previous course in Political Theory or Instructor’s Permission.
Instructor(s): S. Chambers
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.307. Race, Politics and Literature. 3.0 Credits.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.308. Democracy and Dictatorship: Theory and Cases. 3.0 Credits.
The course will cover three topics: 1) The conceptualization of political regime, democracy and authoritarianism. We will also consider neighboring concepts of other macro-political structures—government, state, and administration—in order to be able to demarcate what is distinctive about the study of political regimes. 2) The characterization of political regimes in most Western and some non-Western countries, in history and today. We will centrally focus on the so-called "Waves of Democratization," but we will also consider stories with less happy outcomes, that is, processes that led to the breakdown of democracies and the installation of repressive dictatorships. 3) The explanation(s) of the stability and change of political regimes around the world. Theoretical accounts of regime change come in many flavors—emphasis on economic versus political causes, focus on agents and choices versus structures and constraints, international versus domestic factors, among others. We will consider most of them.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences.

AS.190.310. The Political Economy of Order and Prosperity. 3.0 Credits.
The course offers an introduction to the relation between politics and economics in the long run by focusing on the interaction between order and prosperity. A central topic is the effects of macro-political institutions, like types of regime and state, on the capacity of societies to generate wealth and redistribute it. The course will also examine the political impact of economic performance across countries, for instance: how do economic booms and recessions affect democratic governance? The course provides the essential conceptual and theoretical tools for the analysis of political economy processes and outcomes.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences.

AS.190.311. Disposable People: Race, Immigration and Biopolitics. 3.0 Credits.
This course will explore theories and practices of race and immigration in order to illuminate the proliferation of populations regarded as disposable in contemporary politics. We will pay special attention to the contestable criteria used to determine eligibility for membership in the human race. We shall also examine how political power influences the relays between citizenship status and those whose lives are worthy of protection, and those who should be allowed to die.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences.

AS.190.313. Dreams of America. 3.0 Credits.
An exploration of recurrent themes and aspirations in American political thought, focused around three (interconnected) versions of the American dream: Tabula Rasa, Upward Mobility, and Landed Independence.
Instructor(s): J. Bennett
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.314. Struggles for Democracy: from the French Revolution to the Arab Spring. 3.0 Credits.
This course is a systematic introduction to theories of regime change, which includes episodes of democratic transitions (gradual or revolutionary) and breakdowns, as well as trajectories of regime stability, like the persistence of various types of authoritarian rule and democratic polities. Two thirds of the course will cover theories, which in comparative politics are mostly inductive constructions from historical experiences. The remaining third will be case studies of exemplary events and processes, for instance, the differentiation of political regimes in post-WWI Europe in terms of liberal, fascist, and social-democratic regimes; the convergence towards democracy in Western Europe and Latin America between 1950 and 1990, and the fragility of democracy in Tropical Africa and the Middle East.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences.

AS.190.315. Asian American Politics. 3.0 Credits.
This course examines issues of political identity, political incorporation, and political participation of Asian Americans. Themes include Asian American panethnicity, the struggle for immigration and citizenship, Asian American electoral politics, political activism and resistance since the 1960s, and the impact of Asian Americans on the politics of race and ethnicity in the United States.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.317. Race and Segregated Time. 3.0 Credits.
This course explores how time, and not just space, is segregated along racial lines. We shall examine how racial injustices are experienced as impositions on human time, how resistance to racial inequality has often been figured in temporal terms, and what it means to think in untimely ways that challenge how the extended lifespans of racially dominant groups is contingent upon the foreshortened lifetimes of racial others. Readings will bring political theory into contact with contemporary experiences of race, such as: criminal (in)justice, environmental racism and the proliferation of human disposability. Recommended Course Background: One Political Theory course.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences.

AS.190.318. Political Monsters. 3.0 Credits.
This undergraduate seminar in political theory will explore the politics of fear through the trope of political monsters. We will engage with the genre of horror as a political genre, and ask why our current time period seems to be marked by particular sorts of monsters—zombies, vampires, and others. The course will engage with a variety of texts (political tracts, literary and other fictional projects, theoretical works) along with film and television and other media. The trope of political monsters will be the vehicle through which we explore the politics of democracy, of race, of colonialism, and of capitalism.
Instructor(s): P. Brendese; S. Chambers
Area: Social and Behavioral Sciences.
AS.190.320. Politics Of East Asia. 3.0 Credits.
Examines some of the central ideas and institutions that have transformed politics in the contemporary world through the lens of East Asia, focusing on Japan, South Korea, Taiwan, and China. Topics include state-society relations, late development, nationalism, democratization, political culture, social movements, and globalization.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences.

AS.190.325. Finding Equality in Law and Society. 3.0 Credits.
In this class, we will ask questions about the relationship between equality, law, and society. We will investigate how people have used law in their movements for greater equality, and ask whether law has served these movements well and how it has worked. We will pay particular attention to movements based on race, gender, and economic class.
Instructor(s): E. Zackin

AS.190.326. Democracy And Elections. 3.0 Credits.
An examination of most aspects of democratic elections with the exception of the behavior of voters. Topics include the impact of various electoral systems and administrative reforms on the outcome of elections, standards for evaluations of electoral systems, and the impact of the Arrow problem on normative theories of democratic elections.
Instructor(s): R. Katz
Area: Social and Behavioral Sciences.

AS.190.327. Politics of Information. 3.0 Credits.
Considers global and comparative politics of information, information technologies, and the Internet. Examines governance of information (ownership of information, rights to information, privacy) and governance of information technologies (domain names, social media websites, etc.). Students who previously took AS.190.327 Politics of Information may not take this course.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences.

AS.190.329. National Security-Nuclear Age. 3.0 Credits.
This course examines the impact of weapons of mass destruction on international politics with an emphasis on security issues. The first half of the course focuses on the history of nuclear weapons development during the Cold War and theories of deterrence. The second half of the course considers contemporary issues including terrorism, chemical and biological weapons, ballisitic missile defense and proliferation. Requirements include a midterm, final and a ten page paper.
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.330. Japanese Politics. 3.0 Credits.
This course introduces students to the major debates and issues of postwar Japanese politics. Topics include nationalism, electoral politics, civil society, and immigration.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.333. American Constitutional Law. 3.0 Credits.
This course covers enduring debates about the way the Constitution has structured the U.S. government and about which powers the Constitution assigns to the federal government and to the states. We will examine these debates in the context of American political history and thought by studying the writings of prominent participants, and landmark Supreme Court cases.
Instructor(s): D. Dagan de Picciotto; E. Zackin
Area: Social and Behavioral Sciences.

AS.190.334. Constitutional Law. 3.0 Credits.
The second semester of a two semester course. Topics include executive and emergency power, racial and gender equality, and selected free speech and religious freedom issues.
Prerequisites: AS.190.333
Instructor(s): E. Zackin
Area: Social and Behavioral Sciences.

AS.190.335. Imagining Borders. 3.0 Credits.
What is a border and why do borders matter in global politics. What do borders mean under conditions of globalization? An examination of the politics of borders, transborder flows, and networks within and across borders. The readings which come from political science and other disciplines, will include theoretical and case-specific works.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences.

AS.190.339. American Racial Politics. 3.0 Credits.
Recommended Course Background: AS.190.214
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.340. Black Politics I. 3.0 Credits.
This course is a survey of the bases and substance of politics among black Americans and the relation of black politics to the American political system up to the end of Jim Crow. The intention is both to provide a general sense of pertinent issues and relations over this period as a way of helping to make sense of the present and to develop criteria for evaluating political scientists’ and others’ claims regarding the status and characteristics of black American political activity.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.341. Korean Politics. 3.0 Credits.
This course introduces students to the historical and institutional foundations of modern South Korean politics. Topics include nationalism, political economic development, civil society, globalization, and ROK-DPRK relations. (CP)
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.342. Black Politics II. 3.0 Credits.
Recommended Course Background: AS.190.340.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.343. Research Seminar on Political Parties. 3.0 Credits.
This seminar has two basic objectives: both theoretical and empirical study of selected topics in the comparative literature on political parties, and the ultimate production of a publishable-quality (or conference-presentable-quality) paper. Topics will include (but not be limited to) the place of parties in political theory and the nature of party systems, party organization, and party behavior in the United States and other countries.
Instructor(s): R. Katz
Writing Intensive.
AS.190.344. Seminar In Anti-Semitism. 3.0 Credits.
Jews exercise a good deal of power in contemporary America. They are prominent in a number of key industries, play important roles in the political process, and hold many major national offices. For example, though Jews constitute barely two percent of America's citizens, about one-third of the nation's wealthiest 400 individuals are Jewish and more than ten percent of the seats in the U.S. Congress are held by Jews. One recent book declared that, "From the Vatican to the Kremlin, from the White House to Capitol Hill, the world’s movers and shakers view American Jewry as a force to be reckoned with." Of course, Jews have risen to power in many times and places ranging from the medieval Muslim world and early modern Spain through Germany and the Soviet Union in the 20th century. In nearly every prior instance, though, Jewish power proved to be evanescent. No sooner had the Jews become "a force to be reckoned with" than they found themselves banished to the political margins, forced into exile or worse. Though it may rise to a great height, the power of the Jews seems ultimately to rest on a rather insecure foundation. Cross-listed with Jewish Studies. Course is open to juniors and seniors.
Instructor(s): B. Ginsberg
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.352. The Politics of Global Development. 3.0 Credits.
Development is often assumed to be an economic issue. In this course we examine the politics of development on a global scale. We begin by looking at the colonial and Cold War histories of development. We then use these histories to contextualize contemporary development issues that directly affect international relations such as aid and debt, humanitanism, food security, land "grabs", migration and indigenous rights. The course also seeks to understand the ways in which the issues underlying global development have always connected and continue to connect the peoples and polities of the Global North and Global South.
Instructor(s): R. Shilliam.

AS.190.360. Power and Democracy in the American City. 3.0 Credits.
How do race and class intersect to shape how democracy works in American cities? In this innovative course students will learn about urban citizenship, authority, and activism using Baltimore as a case. The class, co-taught with Baltimore organizers, will use a community based learning approach.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.365. Black Politics: Black Lives Matter. 3.0 Credits.
Over the past two years the #blacklivesmatter movement has transformed the discussion about policing in American cities. In this course we will examine the broad movement against police brutality through the lens of black politics.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.368. Pluralism. 3.0 Credits.
This seminar will explore the theory and politics of pluralism: from European debates over religious tolerance to American debates over constitutional founding; from liberal political philosophy to radical democracy. Authors may include Bentley, Dahl, Locke, Madison, Ranciere, Rawls, Young. Recommended Course Background: Previous course in political theory or permission of instructor.
Instructor(s): S. Chambers
Area: Social and Behavioral Sciences

AS.190.373. The Politics of Public Policy. 3.0 Credits.
This course is an introduction to the political structure and process of making public policy in the United States. Public policymaking is, above all, an arena in which policy professionals try to bring systematic evidence and scientific knowledge to bear to diagnose, understand, and solve social problems. At the same time, policymaking also takes place in a political environment, in which strategic and purposive actors contend for power and seek to advance their own goals and realize their own visions about how the world ought to be changed for the better. The goals that participants in the policymaking process pursue may take a variety of forms: substantive policy outcomes, of course, but also power, political advancement, or material advantage. The actors who populate the process, moreover, may disagree about the goals they seek and making policy — especially in democratic political systems — requires some means of resolving these disagreements. Actors also differ in the resources they have at their disposal to seek their goals — power, money, organization, for example, but also knowledge and expertise. Finally, policymakers cannot do anything they want in pursuit of their goals. They are constrained by the rules and structures that make up the policymaking system. These factors — actors, goals, resources, knowledge, and rules — shape the politics of policymaking and frame the strategic options available to policymakers.
Instructor(s): B. Mikulski; R. Lieberman.

AS.190.379. Nationalism and the Politics of Identity. 3.0 Credits.
Nationalism ties powerful organizations to political mobilization, territory, and individual loyalty. Yet nationalism is typically studied in isolation from other social formations that depend upon organizational — individual linkages. Alternative types of identity category sometimes depend similarly upon organizations that collect and deploy resources, mobilize individuals, erect boundaries, and promote strong emotional connections among individuals as well as between individuals and institutions. In this class, we study classic and contemporary works on nationalism, drawn from multiple disciplinary and analytic traditions, in the comparative context of alternative forms of identity. The focus of the class will be primarily theoretical, with no regional or temporal limitations.
Instructor(s): M. Kocher.

AS.190.380. The American Welfare State. 3.0 Credits.
This course analyzes the distinctive US welfare state in historical and comparative perspective. We begin with a survey of the policy context, an historical overview from the poorhouses through the Great Society, and a tour of welfare states across the rich democracies. We then survey developments — and explain the actual workings of policy — across jobs, education, welfare, pensions, and health care. We explore the institutional and political factors behind their divergent trajectories through conservative revival and the age of Obama. Students will write a seminar paper exploring policy development over time in a program or area of their choosing. Enrollment restricted to Social Policy minors only.
Prerequisites: Students may take AS.190.380 or AS.360.380, but not both.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.381. Global Environmental Politics. 3.0 Credits.
Instructor(s): B. Allan
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.382. Democracy and Development: Theory and Cases. 3.0 Credits.
Most wealthy countries are democracies. But not all democracies are wealthy—India, Costa Rica, and Mongolia are prominent examples of poor countries with democratic regimes. The course will examine the relation between economic development and political democratization under three big questions. (a) Under what conditions, and through which mechanisms, does economic development promote democracy? (b) If economic development is not possible in the foreseeable future, how do countries achieve stable democratization? (c) Under what conditions, and through which mechanisms, does democracy foster economic development?
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.384. Urban Politics & Policy. 3.0 Credits.
An analysis of public policy and policy-making for American Cities. Special attention will be given to the subject of urban crime and law enforcement, poverty and welfare, and intergovernmental relations. Cross-listed with Africana Studies
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.385. Urban Politics and Policy. 3.0 Credits.
An analysis of public policy and policy-making for American Cities. Special attention will be given to the subject of urban crime and law enforcement, poverty and welfare, and intergovernmental relations. Cross listed with Africana Studies.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences.

AS.190.387. Parties and Elections in America. 3.0 Credits.
Considers how parties and elections structure political conflict, and facilitate (or not) democratic control of government. Topics include campaigns, voting behavior, election administration, money in politics, presidential nomination, and party coalitions.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.391. Time to Kill: Race, Punishment, Death and Desire. 3.0 Credits.
This course examines the role of race in determining who deserves to be punished, the timing and occasions of punitive action and how long punishment should endure. Key to our inquiry is how racialized presumptions about human desire might justify punitive logics of power. The class explores inequalities in the distribution of punishment and death in order to illuminate how race shapes questions of whose time is more valuable, who lives and who dies, and ultimately whose lives count as human.
Instructor(s): P. Brendese
Area: Social and Behavioral Sciences.

AS.190.393. Theories of Constitutional Interpretation. 3.0 Credits.
In this course, we will read and discuss a variety of arguments about how best to interpret constitutional texts, with particular attention to debates about the U.S. Constitution. The course will also cover debates about the role of ordinary people, legislatures, and judges in determining the content of constitutional law.
Instructor(s): E. Zackin
Area: Social and Behavioral Sciences.

AS.190.394. Comparative Politics of the Middle East and North Africa. 3.0 Credits.
This course examines the domestic, regional, and transnational politics of the Middle East and North Africa. The class is organized into three units. The first examines major armed conflicts— anti-colonial, intra-state, and inter-state—from 1948 through the 1990s. It uses these historical moments as windows onto key issues in Middle Eastern and North African political issues such as external intervention/occupation, human rights, sectarianism, social movements, and memory politics. Unit Two focuses on policy relevant issues such as democratization, minority populations, religion and politics, and gender. In Unit Three, students will explore the politics of the Arab Uprisings through critical reading and discussion of new (post-2011) scholarship on MENA states, organizations, and populations. Enrollment limited to Political Science and International Studies majors.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences.

AS.190.396. Capitalism and Ecology. 3.0 Credits.
Capitalism and Ecology focuses on the relations between capitalism and climate during the era of the Anthropocene. How do capitalist processes of fossil extraction, consumption, production and governance contribute to the pace of climate warming, glacier flows, the ocean conveyor system, species loss and other phenomena? What are the effects and the possible modes of political response? How do the nonhuman, self-organizing processes such as glaciers, oceans and climate change on their own as they also amplify the effects of capitalist emissions? The course combines texts on capitalism and activism with those by geoscientists on how the nonhuman systems work. Books by authors in the fields of political theory, geology, anthropology, economics, philosophy and ethology will be drawn upon. Authors such as Michael Benton, Brian Fagan, Hayek, Naomi Klein, Fred Hirsch, Fred Pearce, van Dooren and Connolly are apt to be read to engage these issues. A previous course in political theory is recommended. The class is organized around student presentations on assigned readings. Two papers, 10-12 pages in length. Extensive class discussion.
Instructor(s): W. Connolly
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

AS.190.397. States and Markets. 3.0 Credits.
The course offers an introduction to the relation between politics and economics by focusing on the interaction between the two most important institutions of the modern world: states and markets. Under what conditions do states and markets combine to promote or damage human welfare? Essential concepts, theories and cases of economic development will be examined.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.398. Politics Of Good & Evil. 3.0 Credits.
The Politics of Good and Evil places a set of classic myths into
correlation with recent philosophical and political work on existential
questions. The myths include the Book of Job, Genesis (J version),
two dramas by Sophocles, a selection from Augustine, and Voltaire's
Candide. Texts by Nietzsche (Thus Spoke Zarathustra), William James,
(A Pluralistic Universe) and Connolly are then placed into conversation
with both each other and these classic stories. Kohlberg's The Sixth
Extinction closes the class, encouraging us to think again about the
relations between mythic orientations to responsibility, tragic possibility,
nature/culture imbrications and the shape of contemporary life during
the Anthropocene. Previous work in political theory is recommended.
The course is devoted to "elemental theory", in which diverse existential
stories jostle each other and periodically disturb us, challenging us to
explore new thoughts in a new world. One class presentation, two 10-12
page papers, and extensive class discussion.
Instructor(s): W. Connolly
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.401. International Relations Theory. 3.0 Credits.
This seminar covers the main theoretical perspectives employed in the
analysis of international politics, covering a variety of realist, liberal,
and constructivist work. The strengths and weaknesses of different
approaches will be assessed and contrasted with one another, with
the goal being to provide students with a broad foundation on which
to develop their own understandings. The course is open to graduate
students and advanced undergraduates.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.402. Environmental Racism. 3.0 Credits.
This is an undergraduate political theory seminar that addresses the
disproportionate impact of environmental destruction on racially
stigmatized populations. We shall examine the logics of power whereby
the natural world is subjected to exploitation and domination, in tandem
with the subordination of racial subjects historically identified as closer
to nature. Likewise, we will explore political and theoretical challenges to
environmental racism, such as those posed by indigenous communities,
decolonial theory, and political movements contesting the intersection of
racial inequalities and ecological crises.
Instructor(s): P. Brendese
Writing Intensive.

AS.190.404. Race and Debt: Living on Borrowed Time. 3.0 Credits.
This is an advanced undergraduate seminar that explores how racial
stigma functions as a marker of being always already in debt. In view of
the legacies of settler-colonialism, imperialism and chattel slavery, how
is it that those from whom so much has been taken are nevertheless
regarded as perpetually in debt? We shall examine the moral, economic
and racialized logics of power through which a range of political subjects
come to be regarded as ungrateful “takers” as opposed to “makers,” and
owing a debt to society. In so doing, we will investigate how temporality
functions as a tool of power by considering how the indebted are made
vulnerable to precarity, discipline, and disposability—in effect, forced to
live on borrowed time.
Instructor(s): P. Brendese
Writing Intensive.

AS.190.405. Food Politics. 3.0 Credits.
This course examines the politics of food at the local, national, and global
level. Topics include the politics of agricultural subsidies, struggles over
genetically modified foods, government efforts at improving food safety,
and issues surrounding obesity and nutrition policy. Juniors, seniors, and
graduate students only. Cross-listed with Public Health Studies.
Instructor(s): A. Sheingate
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.406. The Executive Branch. 3.0 Credits.
In the 19th Century America was noted for its courts, political parties
and representative institutions. Today, America's political parties and
representative institutions have declined in importance while the
institutions of the executive branch have increased in importance. This
seminar will examine the nation's key executive institutions and aspects
of executive governance in the U.S. Students will alternate primary
responsibility for week's readings. Every student will prepare a 10-15 page
review and critique of the books for which they are responsible in class.
Instructor(s): B. Ginsberg
Area: Social and Behavioral Sciences.

AS.190.407. Geopolitics, Nuclear Weapons and World Order. 3.0 Credits.
Intensive examination of unresolved debates about the implications of
nuclear weapons for world order, focusing on deterrence, strategy, arms
control, multipolarity, proliferation, terrorism, and abolition, as well as
roles of liberal, democratic, and constitutional political forms and popular
public involvement. Readings from classic and contemporary sources.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences.

AS.190.408. Sovereignty: Historical Perspectives and Contemporary
Issues. 3.0 Credits.
This seminar provides an in-depth exploration of the concept of
sovereignty by examining its historical development and its use in
international relations scholarship. Our discussion will also be informed
by works in political theory and the international law literature. The
course is open to advanced undergraduate students and graduate
students.
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.412. The Use and Misuse of Force. 3.0 Credits.
An examination of the ways in which violence has been used to secure
political ends. Topics include terrorism, assassination, genocide, coups,
rebellions and war itself. Students examine what makes types of political
violence unique and what unites them. (Formerly AS.190.372)
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.416. Nuclear Weapons and World Politics. 3.0 Credits.
This course examines the impact of nuclear weapons on international
politics and world order. Topics to be considered include theories of
deterrence, proliferation, the development of new weaponry, terrorism,
defense, arms control and abolition. The effect of nuclear weapons on
the existing state system and prospects for new configurations of world
governance will also be addressed.
Instructor(s): D. Deudney, S. David.
AS.190.420. Nuclear Power and World Order. 3.0 Credits.
This course provides an in-depth examination of evolving debates over world political order and nuclear deterrence, war-fighting, arms control, world government, proliferation, and terrorism.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.424. Policy Disasters. 3.0 Credits.
Investigates the causes of large-scale policy disasters, examining the role of ideology, psychology, organization design and political incentives. Examples may be drawn from the Iraq War, Bay of Pigs, Hurricane Katrina, the U.S. Financial crisis, Shuttle Challenger disaster, economic development policy, privatization, and the Great Society. Limited to seniors or with permission of instructor. (CP / AP)
Instructor(s): S. Teles
Area: Social and Behavioral Sciences.

AS.190.425. The New Deal and American Politics. 3.0 Credits.
This seminar explores how the New Deal, the fundamental moment in the post-Civil War United States, has structured politics and government across a variety of domains ever since. Topics include presidential leadership, executive power, political parties, labor, race, and the welfare state.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.426. Science and Expertise in Global Politics. 3.0 Credits.
An in-depth examination of complex global problems that demand the effective use of scientific and expert knowledge in global governance. We will begin with a theoretical overview covering different perspectives on the role of knowledge and technology in global politics before looking in more detail at case studies drawn from environmental politics, nuclear management, colonial history, international political economy, UN peacekeeping, and more.
Instructor(s): B. Allan
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.427. Political Economy of Japan and Korea. 3.0 Credits.
This upper-level seminar examines some of the major debates and issues of postwar Japanese and South Korean political economy. Topics include nationalism, gender politics, civil society, immigration, and US-Japan-South Korea trilateral relations.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.429. The Political Bases of the Market Economy. 3.0 Credits.
Although “the market” is conventionally understood as separate from “politics”, the modern market economy did not arise in a political vacuum. In fact, the very separation between the economy and politics is itself the product of a politically potent set of ideas. This course is an upper-division reading seminar on the origins and evolution of the modern market economy. Readings will include Smith, Marx, Weber, Polanyi, Keynes, Hayek, Friedman, Becker, and Foucault. Recommended course background: Introduction to comparative politics OR any college-level course in social or political theory.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.430. Time and Punishment. 3.0 Credits.
"If you can't do the time, don't do the crime." According to ask.com, this common expression was made popular in the 1970s by the theme song for the television show “Beretta.” Aside from amusing us with the irony that the star of “Beretta” was Robert Blake who was later charged with the murder of Bony Lee Bakely, the expression raises a profound issue: What is the relationship between punishment and time? This course will explore that question. Topics to be discussed include different philosophical understandings and experiences of time, views of mortality and fate, theories of punishment, specific punishments in the U.S. (including sentences of juveniles, life, death, and LWOP), as well as punishments that are not specifically meted out but are known to be the consequences of political, social, and economic circumstance. Students will read texts in criminology, political theory, philosophy, and jurisprudence, as well as a selection of Supreme Court cases, novels, and short stories. This writing intensive course is limited to undergraduates who have taken at least one "Classics of Political Thought" course (190.280, 190.281, 190.282, or 190.283).
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences.

AS.190.431. Global Climate Governance. 3.0 Credits.
This course will offer an in-depth study of the history and politics of global climate governance. It will examine the central actors, agreements, and policy proposals that shape climate governance.
Instructor(s): B. Allan
Area: Social and Behavioral Sciences.

AS.190.432. Topics in Global Security Politics. 3.0 Credits.
Intensive examination of catastrophic and existential risks posed by natural and technogenic sources (including nanotechnology, synthetic biology, cyberwar, artificial intelligence, asteroidal collision, climate change and space colonization) and their political implications
Prerequisites: Pre-reqs: AS.190.413 or AS.190.220
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.434. Does Israel Have a Future?. 3.0 Credits.
Israel is one of the only countries whose existence is openly challenged. This class will examine the future of Israel focusing on international and domestic threats to its continued existence as a Jewish democracy. Outside threats to be considered include nuclear attack and the growing international movement to delegitimize Israel. Domestic challenges include demographic changes, the role of religion in governance, and doubts as to whether one can be a Jewish state and still be a democracy. Lessons from the destruction of the ancient Israelite kingdoms and from contemporary state deaths will be included. The course will conclude by considering efforts that Israel can undertake to meet the threats it faces.
Instructor(s): S. David
Area: Social and Behavioral Sciences.

AS.190.435. Law and Literature. 3.0 Credits.
This course will examine the relationship between law and literature. As many have observed, law and literature have much in common as well as much to teach each other. Topics this course will discuss include practices of interpretation, issues of authority, the rule of law, and the power of narrative. In addition to reading essays by scholars in the field, students will read a selection of judicial opinions, short stories, novels, and plays.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.436. Republican Orders and Sustainability. 3.0 Credits.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences.

AS.190.438. Violence and Politics. 3.0 Credits.
This seminar will address the role of violence—both domestic and international—in political life. Though most claim to abhor violence, since the advent of recorded history, violence and politics have been intimately related. States practice violence against internal and external foes. Political dissidents engage in violence against states. Competing political forces inflict violence upon one another. Writing in 1924, Winston Churchill declared—and not without reason—that, "The story of the human race is war" Indeed, violence and the threat of violence are the most potent forces in political life. It is, to be sure, often averred that problems can never truly be solved by the use of force. Violence, the saying goes, is not the answer. This adage certainly appeals to our moral sensibilities. But whether or not violence is the answer presumably depends upon the question being asked. For better or worse, it is violence that usually provides the most definitive answers to three of the major questions of political life: statehood, territoriality and power. Violent struggle, in the form of war, revolution, civil war, terrorism and the like, more than any other immediate factor, determines what states will exist and their relative power, what territories they will occupy, and which groups will and will not exercise power within them. Course is open to juniors and seniors.
Instructor(s): B. Ginsberg
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.439. Advanced Topics in Global Politics: Learning Through Research. 3.0 Credits.
Join a research team. In this course, students will explore topics in global politics and methods for the conduct of inquiry in the Johns Hopkins tradition of learning through research. Under the guidance of the professor, students will learn about a topic from existing primary and secondary sources, collect new empirical evidence, analyze the evidence, and contribute to research products. Recommended for students planning to write a thesis. Junior or Senior standing in Political Science or International Studies or permission of instructor.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.440. European Politics in Comparative Perspective. 3.0 Credits.
Europe has been in a sense the first testing ground for theories of comparative politics, but many outsiders now see Europe as a pacified and somewhat boring place. This course will question conventional wisdom through an examination of European politics in historical and cross-national perspective. We will apply the comparative method to the study of European politics today, and conversely we will ask what Europe tells us more generally about politics. We will see that Europe is still a locus of intense conflict as well as remarkably diverse experimentation. Topics will include: political, legal, and economic governance; the evolution of democracy and fundamental rights, the welfare state, class stratification, immigration and race, the role of religion; European integration and globalization. Juniors and seniors only.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.441. Comparative European Politics. 3.0 Credits.
In comparison with other regions of the world, Europe can easily appear as a pacified and somewhat boring place. This course will question this stereotype through an examination of European politics in historical and cross-national perspective. From a historical perspective, Europe has been the crucible of modern politics. And to this day, Europe remains a locus of intense conflict as well as remarkably diverse experimentation. We will read seminal scholarly works as well as recent comparative politics literature on European politics. The goal is to understand and discuss central concepts that comparative politics scholars mobilize in the study of European politics across time and space. Topics will include: political, legal, and economic governance; the evolution of democracy, the welfare state, partisan politics, immigration, race, and religion; European integration and globalization.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.442. Civil Society. 3.0 Credits.
This course explores classic and contemporary debates on the concept of civil society and critically examines its analytical value in light of recent developments. Topics include the relationship between civil society, the state, and markets, the role of civil society in development and democratization, social capital, and global civil society. This course is open to graduate students from any discipline. Advanced undergraduate students must obtain permission from the instructor and are expected to keep up with graduate students during class discussions.
Instructor(s): E. Chung
Writing Intensive.

AS.190.443. Politics of Outer Space. 3.0 Credits.
Intensive examination of the political aspects of human activities in outer space, past, present and future, with focus on militarization, earth-remote sensing, surveillance, navigation, resource exploitation, the Outer Space Treaty, and colonization.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.444. Causes of Peace. 3.0 Credits.
Since 1945, the great powers have enjoyed their longest period of peace in history. Interstate conflict between lesser powers is also at an all time low. What accounts for this “long peace?” This course will look at various explanations including the spread of democracy, the proliferation of nuclear weapons, globalization, American hegemony, and fundamental changes in attitudes regarding the use of force. Students will present draft versions of their research papers during the last weeks of the course. Co-listed with AS.190.619
Instructor(s): S. David
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.445. Power and Wealth: Sources, Dynamics and Linkages. 3.0 Credits.
This seminar explores theoretical approaches to the multiple relations between political power and economic power, including pluralism, Marxism, and historical institutionalism. Major empirical transformations will provide the motivation: the rise of modern states, capitalism and social classes in Early Modern Europe, the creation of highly unequal societies in post-colonial Latin America and Africa, the varieties of Welfare State in the golden age of advanced capitalism (1950-75), and the powerful rebirth of inequality in advanced economies for the last 25 years. Theories of sources and interactions of political and economic power will be coupled with accounts of the effects of power and wealth on macroscopic change, especially democratization and economic development. Open to juniors, seniors, and graduate students.
Instructor(s): B. Ginsberg; R. Kargon
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.450. Power. 3.0 Credits.
Power is a -- if not the -- key concept of international relations, yet there is no single definition of power that is accepted by all scholars in the field. In this course we will critically examine definitions of power from classic and contemporary works of international relations, political science, and related areas of study.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences

AS.190.451. Geopolitics. 3.0 Credits.
Intensive exploration of theories of how geography, ecology, and technology shape political orders. Case studies of ancient, early modern, global, and contemporary topics, including European ascent, industrial revolution, tropics and North South divide, climate change, geo-engineering and global commons (oceans, atmosphere and orbital space
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.455. Comparative Racial Politics. 3.0 Credits.
This upper-level seminar surveys the major trends and approaches to the comparative study of race in political science and critically examines the link between race and politics. Topics include race and state formation, citizenship and national membership, immigration, racial regimes, and the political economy of race. Recommended background: Courses in comparative politics, political economy, immigration, and racial politics
Instructor(s): E. Chung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.456. Politics of TransHumanism. 3.0 Credits.
Examination of politics of human biological and cybernetic augmentation, and replacement with focus on stratification, weaponization, collectivization, extinction and irregularation.
Instructor(s): D. Deudney
Writing Intensive.

AS.190.471. The University and Society. 3.0 Credits.
In the 20th century, American universities became the envy of the world, leading in most categories of scholarly productivity and attracting students from every nation. In recent years, though, American higher education has come to face a number of challenges including rapidly rising costs, administrative bloat, corporatization and moocification. We will examine the problems and promises of American higher education, the political struggles within the university and the place of the university in the larger society. Upper classes and Grad Students only.
Instructor(s): B. Ginsberg; R. Kargon
Area: Social and Behavioral Sciences.

AS.190.479. Imag(in)ing Cities. 3.0 Credits.
Cities exert a substantial degree of control over American life. Throughout the 20th and early years of the 21st Century they have been centers of industry, of social change, of political change. And in part because of their status, scholars have begun to theorize about cities. The purpose of this class is to interrogate these theories through a filmic lens. Students will be exposed to readings and then in the second half of the semester, to films about cities that implicitly and explicitly speak to and about these theories. Some coursework in urban studies preferred, though not necessary.
Instructor(s): L. Spence
Area: Social and Behavioral Sciences

AS.190.480. Planetary Interdependence and World Governments. 3.0 Credits.
Intensive exploration of alternative global political architectures for high levels of security, ecological and internet interdependence
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.481. Conservatism and Crime. 3.0 Credits.
This course will examine the evolution of conservative thought on crime and criminal justice from the 1960s to the present. We will focus in particular on how the subject of crime illuminates different strains of conservatism, reveals tensions between its values of liberty, authority and anti-statism, and shows the changing approach that conservative intellectuals have had to race.
Instructor(s): S. Teles
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.491. Game Theory in the Social Sciences. 3.0 Credits.
Strategic thinking is a fundamental component of many political and economic phenomena, from international wars and national elections to wage bargains and monopoly power. Game Theory is a set of ideas and techniques for analyzing strategic interactions and making predictions about its outcomes. This course provides an introduction to Game Theory and its main applications to relevant political and social outcomes.
Juniors and Seniors Only.
Prerequisites: AS.110.106 or AS.110.108
Instructor(s): S. Mazzuca
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.190.498. Thesis Colloquium. 3.0 Credits.
Open to and required for Political Science majors writing a thesis. International Studies majors writing a senior thesis under the supervision of a Political Science Department faculty member may also enroll. Topics include: research design, literature review, evidence collection and approaches to analysis of evidence, and the writing process. The course lays the groundwork for completing the thesis in the second semester under the direction of the faculty thesis supervisor. Students are expected to have decided on a research topic and arranged for a faculty thesis supervisor prior to the start of the semester. Seniors. Under special circumstances, juniors will be allowed to enroll. Enrollment limit: 15.
Instructor(s): A. Sheingate.
AS.190.499. Senior Thesis. 3.0 Credits.
Seniors also have the opportunity to write a senior research thesis. To be eligible to write this thesis, students must identify a faculty sponsor who will supervise the project. Once a faculty sponsor has approved a topic, students must enroll in a three credit independent study during the fall semester of their senior year. At the end of the fall semester, if the faculty sponsor determines that adequate progress has been made and the project warrants further work, the student may enroll in the senior thesis (AS.190.499) which will be worth 6 credits.
Instructor(s): S. David
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.601. Qualitative Research.
This class is designed to introduce students to qualitative methodology. Practically, students will gain first hand experience with qualitative research methods via research design, ethics review, in-depth interviewing, participant observation, and archival/primary source research. They will learn to deploy analytical techniques such as discourse analysis and process tracing. Students will also be asked to consider the merits of qualitative approaches more generally, and discuss the relative advantages of qualitative, experimental, and quantitative approaches. Questions that we will discuss include: What place should qualitative research have in a research design? Can qualitative research test hypotheses, or only generate them? Can qualitative research explain social phenomena, or only interpret them? What are the disadvantages and advantages of qualitative approaches compared to quantitative approaches? For what kinds of research questions are ethnographic techniques best suited? Is replicability possible for ethnographic field research? What criteria of evidence and analytical rigor apply on this terrain?
Instructor(s): A. Lawrence; S. Parkinson
Area: Social and Behavioral Sciences.

AS.190.602. Introduction to Quantitative Political Science.
An introduction to measurement and data analysis in contemporary American political science. Measurement topics will include the formation of indices and cumulative scales. Analytic topics will topics include sampling variations, statistical association and causation, as manifested in contingency tables and correlation and regression. Emphasis will be on fundamental concepts and assumptions, and on comprehension and evaluation of the scholarly literature. Advanced undergraduates by permission only.
Instructor(s): R. Katz
Area: Social and Behavioral Sciences.
AS.190.608. Influx and Efflux.
While many contemporary philosophies of the self, and of human agency, tend to emphasize the activity of expression — the enactment or externalization of an intention, desire, will, or purpose, this course will explore the process through which the outside comes in. Influence: the default condition of intrinsically porous and relational bodies. We will examine different models of the process through which individuals are psychically and physiologically affected by forces, shapes, ideas, affects, and tendencies coming from the "outside." Readings include Walt Whitman's experimentation with the democratic potential of "sympathy," Alfred North Whitehead's theory of "affective tone" (which focuses on unconscious and in-sensible modes of influence), Roger Caillois's theory of the "instinct of abandon" (developed at the time of an emergent fascism in Europe), and contemporary theories (in behavioral psychology and cognitive science) of embodied cognition.
Instructor(s): A. Pandian; J. Bennett.

AS.190.609. Law, Critique, Genealogy.
This course will offer a survey of classical and contemporary trends in critical theory through the prism of the law. The readings will trace the development of two modes of critical reflection emerging from Kant's philosophical project, critique and genealogy, exploring the tensions between them through the study of categories such as judgment, case, and jurisdiction. We will examine how these categories themselves reflect the question of "modernity" and the Enlightenment as that question is posed and answered by thinkers from Kant to Foucault and Habermas and beyond. To ground this study, we will focus on critical engagements with human rights, property, and institutional justice around the world. Within an arch of readings that goes from Kant to Butler, the course will include key texts by Hegel, Marx, Benjamin, Horkheimer, Adorno, Marcuse, Habermas, Foucault, and Nancy, as well as texts drawn from critical legal studies and the anthropology of law and justice. There are no prerequisites for this interdisciplinary course. To receive credit, students will be required to attend seminar, prepare for class discussions, and turn in a 20-30 page final research paper, a draft of which will be presented at a workshop at the end of the year.
Instructor(s): J. Culbert; J. Obarrio.

What do the process philosophies of Bergson, Whitehead and Daoism have to say to political manifestos advanced by writers such as Marx and Engels, Naomi Klein, Hardt and Negri, Dziga Vertov, Haitian and French revolutionaries, Folco Portinari. How, in turn, can the latter illuminate, deform, or inform them? The readings in this seminar bounce back and forth between the cosmic politics of process philosophy and a variety of short manifestos designed to speak to the vicissitudes of today.
Instructor(s): J. Bennett; W. Connolly.

AS.190.611. Feminist and Queer Theory.
Graduate students only.
Instructor(s): S. Chambers.

AS.190.612. Comparative Citizenship and Immigration Politics.
Graduate students only. Examines the contemporary political dynamics of migration, citizenship, and race concentrating on North America, Europe and East Asia. We will focus on how citizenship and immigration policies shape immigrant political identities, claims, and strategies as well as how immigrants impact public debates and policies in receiving societies.
Instructor(s): E. Chung
Area: Social and Behavioral Sciences.

AS.190.614. Nietzsche and Deleuze.
This seminar examines key texts by Nietzsche and Deleuze to see how the former influenced the latter and how, where and why Deleuze breaks the Nietzschean influence. Both are known for rethinking radically agency, nature, time, ethics, culture, explanation, politics and the multiple intersections between them. Deleuze treats Nietzsche as a key figure in the "minor" tradition that challenges western "majoritarian" Christian and secular thought. Both are attuned to the role of affective communication, the severe limits of human exceptionalism in Christianity and secularism, the ubiquity of heterogeneous connections, the pursuit of affirmative attachments, the exploration of tragic possibility, and the grasp of unruly periods in nature. While reading Nietzsche might help us to understand otherwise opaque moments in Deleuze (and vice versa) Deleuze can also be said to twist and turn Nietzsche's thought, as he pulls it to the political left, examines the global capitalist "axiomatic", explores "nomadic" science, embraces critical social movements, pursues a world of intersecting "minorities", and emphasizes the rhizomatic character of culture/nature connections. The texts read by Nietzsche texts may include Daybreak, sections from The Gay Science, The Genealogy of Morals and sections from Will to Power. D&G texts may include Difference and Repetition, sections from A Thousand Plateaus, What is Philosophy? and The Fold. Untimely Interventions from Simondon, C Keller, Whitehead, L. Margulis, I Stengers, N. Lawtoo, or B. Massumi could be "folded" into the mix.
Instructor(s): W. Connolly.

AS.190.615. International Relations Theory.
This seminar covers the main theoretical perspectives employed in the analysis of international politics, covering a variety of realist, liberal, and constructivist work. The strengths and weaknesses of different approaches will be assessed and contrasted with one another, with the goal being to provide students with a broad foundation on which to develop their own understandings. Meets with AS.190.401
Instructor(s): S. Schmidt
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.616. American Political Development.
An examination of state-building and nation-building throughout American political history. (AP)
Instructor(s): A. Sheingate; R. Lieberman.

AS.190.617. Romanticism and Radicalism.
A study of a group of European and American writers, including Schiller, Shelley, Emma Goldman, Walt Whitman, Georges Sorel, Carl Schmitt, Guy Debord and other Situationists, Georges Perec, Herbert Marcuse, Theodor Adorno, and contemporary artists and theorists of the aesthetic, in order to explore connections between romantic themes and the aspiration for a significant transformation of political life. What are the complex relations between artistic and revolutionary practice? What are the standards by which to assess the viability of romantic, counter-cultural, or eccentric artworks/texts/events?
Instructor(s): J. Bennett; W. Connolly
Area: Social and Behavioral Sciences
Writing Intensive.
AS.190.618. What Was/Is Fascism?.
An examination of texts on twentieth century fascist movements and societies in relation to twenty first century movements. What roles do capitalism, imperialism, racism, democracy, the media, global processes and planetary processes play in them? To what extent does the production and exploitation of resentment shape their intensities? What rhetorical strategies mobilize such movements? What rhetorics and social movements to resist or retune such movements show promise? Texts by Hitler, Arendt, Neumann, Adorno, Marcuse, Deleuze and Kenneth Burke may be among those included. Perhaps the films “Our Hitler” and “The Conformist”, plus a couple of speeches by Donald Trump will be included. Conceptions to democracy first united to challenge fascist drive will also be explored.
Instructor(s): W. Connolly
Area: Social and Behavioral Sciences.

AS.190.619. Great Powers in the Middle East and North Africa.
How have Great Powers shaped the history and politics of states in the Middle East and North Africa? For over a century, Great Powers have been extensively involved in the region: they established colonies, protectorates, and mandates during colonial period; afterward, they employed military force to constrain and shape regimes. Focusing primarily on Great Britain, France, and the United States, this course examines the causes and consequences of foreign military intervention from colonial conquest through the post-colonial period. Students will critically assess claims that link Great Power actions to current-day conditions in the region through evaluating contemporary scholarship and analyzing the history of selected cases.
Instructor(s): A. Lawrence.

In Twilight of the Idols/The Anti-Christ, Nietzsche famously confessed, "I am afraid we are not rid of God because we still have faith in grammar." Drawing from scholarship identified with the Law and Literature movement as well as philosophy, jurisprudence, literary theory, and political theory, this course will engage an on-going conversation about the capacity of language to invent and enforce the expectations, regulations, and ritual formulas we know as law. Readings will include texts by classical and contemporary scholars, including Arendt, Plato, Pierce, Nietzsche, and Nancy, as well as stories by Borges, Kafka, and Melville.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences.

AS.190.621. Poesis and Politics.
This graduate seminar will investigate how an aesthetic approach to political concepts and practices – in particular the concept of the polity and the practice of judgment – responds to, troubles, and complicates political thought. In the company of Plato, Kant, Heidegger, Arendt, and Auden, we will explore two related sets of questions. First, what are the advantages and disadvantages of figuring the polity as a work of art or as an artistic creation? Second, how might poetry play a role in politics? Students will be required to submit weekly response papers and write a final 20-30 page paper on a topic related to the course, drawing on the work of at least two of the thinker-poets discussed.
Instructor(s): J. Culbert.

AS.190.622. Contemporary International Relations Theory.
This course will focus on recent work (from approximately the past 10 years) in International Relations Theory. Emphasis will be placed on contending schools of thought and often divergent means of determining what counts as good theory. In Fall 2014, we will focus on critical approaches to the global and the political, with a special emphasis on theories of borders, bodies, and the global-ness of cyberspace.
Instructor(s): R. Marlin-Bennett
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.623. Capitalism, Discipline, Debt the Anthropocene.
How do we rethink Capitalism in an age of Discipline, Debt, and the Anthropocene? This seminar draws upon a series of Left Nietzscheans to pursue that agenda. It starts with Nietzsche's examination of debt, guilt and subjectivity in The Genealogy, turns to work by Foucault, Deleuze, Esposito, Lazzarato on capitalism, debt and molecular control, adds Klein and Connolly on capitalism and the Anthropocene, and returns to all of the above to explore the potential of critical social movements today.
Graduate students only.
Instructor(s): W. Connolly.

AS.190.624. Postcolonial Ecologies and Planetary Temporalities.
This is an exploratory seminar in which we place recent work on postcolonial ecology and images of time into conjunction with geological and philosophical texts detailing a world of multiple, interfolding human and nonhuman temporalities. The task is to see how each set of readings can enrich and exert pressure upon the others with respect to theory and politics. Texts may include Rob Nixon, The Environmentalism of the Poor; Viveiros de Castro, The Relative Native: Indigenous Conceptual Worlds; Michael Benton, When Life Nearly Died; Donna Haraway, Staying With the Trouble; Deleuze and Guattari, What is Philosophy?; Connolly, Facing the Planetary; Glissant, The Poetics of Relation, Nabokov, A Forest of Time.
Instructor(s): P. Brendese; W. Connolly
Writing Intensive.

AS.190.625. Theories-Comp Politics.
This seminar is intended for graduate students planning to take the comprehensive exam in comparative politics, either as a major or as a minor. In addition to exploring central methodological debates and analytic approaches, the seminar reviews the literature on state-society relations, political and economic development, social movements, nationalism, revolutions, formal and informal political institutions, and regime durability vs. transition. Graduate students only.
Instructor(s): S. Mazzuca
Area: Social and Behavioral Sciences.

AS.190.626. Quantitative Methods for the Study of Politics.
This course is intended as Ph.D.-level introduction to applied statistics, with a focus on the identification of causal effects in the tradition of the Neyman/Rubin potential outcomes framework. Prior coursework in applied statistics or quantitative methods will be useful but is not required. Upon completion of the course, students will be in a position to understand and critically assess scholarship that uses instrumental variables, difference-in-differences, regression discontinuity, and other quasi- and natural-experimental research designs. Formal mathematical proof will be kept to a minimum. Students will be asked to adapt existing code and write some of their own code in R.
Instructor(s): M. Kocher.
AS.190.627. Pragmatism in Politics.
After a long eclipse, the scholarly tradition of pragmatism has recently experienced a revival across the social sciences. The goal of this course is to take stock of this movement and to discuss the usefulness of pragmatism for the study of politics. The readings attempt to weave together classical and recent texts in philosophy, cultural theory, sociology, economics, science studies, as well as political science. We will begin with a survey of pragmatism’s core concepts and methods. Then we will discuss recent applications of the pragmatist approach in the social sciences. Finally, we will explore the links between pragmatism and three contemporary approaches.
Instructor(s): A. Sheingate; N. Jabko
Area: Social and Behavioral Sciences.

AS.190.629. American Racial Politics.
Race is not a biological fact but rather a social construction. However, it is a social construction with very real consequences. Definitions of citizenship, allocation of state resources, attitudes about government and government policy, the creation of government policy, all shape and are shaped by race and racial classifications. Serving as a critical corrective to American politics treatments that ignore race, this class will examine how race functions politically in the United States. While not required, some knowledge of statistics is helpful.
Instructor(s): A. Sheingate; N. Jabko
Area: Social and Behavioral Sciences.

AS.190.630. Politics of Territory and Boundaries.
This seminar will explore territorial dimensions of politics and political action, including the political construction of territorial space and the territorial construction of political space, and borders as spatial markers of fixity and flows. As supra-, sub-, multi-, trans-, inter-, and pluri-national political arenas proliferate, how are they connected, institutionally and in practice? How are they structured by – and how do they structure – the actions of individuals and groups? How does location affect the nature of political authority? Graduate students only.
Instructor(s): M. Keck; R. Marlin-Bennett
Area: Social and Behavioral Sciences.

Examines American social policy in comparative perspective. Special attention to issues of poverty and inequality, and their relation to the political system.
Instructor(s): D. Schlozman.

AS.190.632. The Development of American Political Institutions.
This course explores institutional development in American national politics, from the Founding until the present. It traces parties, Congress, the presidency, bureaucracy, and courts, and also examines how those institutions have interacted with one another across American history. Throughout the course, we will consider how ideas, interests, procedures, and sequence together shape institutions as they collide and abrade over time. Finally, although it hardly covers the entire corpus across the subfield, the course is also designed to prepare students to sit for comprehensive examinations in American politics.
Instructor(s): A. Sheingate; D. Schlozman.

AS.190.633. Black Political Thought.
This course will introduce you to a survey of Black political thought. Our examination will cover the time period between the latter years of the Transatlantic Slave Trade and the present. In the first two thirds of the course we will deal with primary texts (including but not limited to Incidents in the Life of a Slave Girl, The Souls of Black Folk, and The Wretched of the Earth), and in the last third we will deal with modern day attempts to wrestle with the ideas in these texts (including but not limited to Intimate Justice and Critique of Black Reason).
Instructor(s): L. Spence.

AS.190.635. Theories of Constitutional Governance.
This class is focused on the nature of constitutions and the way that they should and do work within a political system, with particular emphasis on the U.S. context. We will examine both normative and empirical arguments about the relationship between politics and constitutional law. More specifically, we will think about how societies and individual actors should make meaning out of constitutional texts, how they do seem to make meaning out of those texts, and the conditions that give rise to constitutional drafting and change. Graduate students only.
Instructor(s): E. Zackin
Area: Social and Behavioral Sciences.

AS.190.637. Critical IR Theories.
Generally relegated to the last week or two on the standard IR theory syllabus, critical IR theories take center stage in this course. We explore the intellectual roots of clusters of critical theories, the foundational works for each cluster, and the current debate. The course will cover Feminist IR Theory, the Practice Turn, and New Materialist IR, among other perspectives.
Instructor(s): R. Marlin-Bennett; S. Schmidt
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.640. Modes of Political Persuasion.
An examination of influential texts in Euro-American political thought, with an eye toward what each has to say about the “how-to” of political persuasion: What techniques can leaders, citizens, and theorists deploy to foster allegiance or conversion to a particular model of politics and public life? How are the powers of words, images, and feelings, especially eros, invoked and inflicted? Given that being persuaded of something may or may not induce a will to enact it, what techniques are available to jump the gap between profession of ideals and undertaking of action? Texts include Aristophanes’ Women Celebrating the Thesmophoria; Plato’s Phaedrus and Books II and III of Republic; Machiavelli’s Prince, Whitman’s “Calamus” poems, Freud’s Civilization and Its Discontents, Foucault’s writings on sexuality and ancient Greek ethical practices, and Beauvoir’s Ethics of Ambiguity and “Must We Burn Sade.”
Instructor(s): J. Bennett
Area: Social and Behavioral Sciences.

AS.190.641. Political Theories of Violence.
The aim of this course is to explore a range of theories and images of violence, from bloody war, torture, and terrorism to the “everyday” violence of policing and disciplinary practices, to the violence of conceptual, linguistic, or figurative representation. As we read contemporary and classic treatments of violence, we will ask: What constitutes violence? Does violence have specific modes of agency or is it an intensification of generally available modes of action? What is the relationship between violence and bodies, violence and representation, violence and social and psychic structures? Is there a relationship between violence and technology? Violence and the sacred? From whence the force of violence? Among others we will read Nietzsche, Foucault, Arendt, Schmitt, Agamben, Sorel, Benjamin, Derrida, Levinas, and Fanon. Grad students only
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences.
This course covers a series of special topics in IR theory with an emphasis on how an appreciation of practices and process provides a fresh perspective on old questions and raises new ones. The course will focus on the pertinent sociological literature and how this has been applied in IR.  
Instructor(s): S. Schmidt  
Writing Intensive.

AS.190.645. Black Politics.  
Grad Students Only.  
Instructor(s): L. Spence  
Area: Social and Behavioral Sciences.

Graduate students only.  
Instructor(s): L. Spence; P. Brendese  
Area: Social and Behavioral Sciences.

AS.190.647. Race and Memory in Politics, Theory and Literature.  
This seminar will investigate various modes of theorizing experiences of race through a critical engagement of a range of literary and philosophical sources pertaining to African-American and Afro-diasporic populations. Specifically, we will explore the extent to which politically attuned approaches to literature and drama can disclose how memory and temporality function as vehicles of racial domination, resistance and identity formation. Graduate students only.  
Instructor(s): P. Brendese  
Area: Social and Behavioral Sciences.

This graduate seminar will examine a range of indigenous political theorists and critics of settler colonialism. In so doing, we will interrogate the role of liberal Anglo-centrism in contested theories and practices of sovereignty, property rights, freedom, equality, race, sexuality and nature. Likewise, we will investigate the contention that settler colonialism is acquisitive of territory in perpetuity, as opposed to being a moment in history, in order to assess the enduring political and theoretical impact of colonial legacies. Importantly, we shall explore how the relays between indigenous cosmologies and temporalities shape theories and practices of resistance, reason, identity and political imagination. Graduate students only.  
Instructor(s): P. Brendese  
Area: Social and Behavioral Sciences.

AS.190.650. The Theories and Politics of Rights.  
Grad Students only.  
Instructor(s): E. Zackin  
Area: Social and Behavioral Sciences.

AS.190.651. Policy Dynamics.  
Policy dynamics is the study of changes of the political system in its entirety, from the point of view of the system’s outputs—what government actually does, or fails to do. It is dynamic in that it seeks to explain changes in what matters governments feel can or must be addressed, the tools that are available to deal with problems, and the interactions of government and non-government actors that generate change. Particular emphasis will be placed on studying policy dynamics over long periods of time, including such post-enactment issues as implementation, policy feedback on political identities and group formation, and policy durability.  
Instructor(s): S. Teles.

AS.190.652. The Politics of Money, Debt and Credit.  
This course will survey recent scholarship on the politics of monetary and financial flows in the economy. We will reflect on the significance and causes of changes in underlying political economy and institutions since the mid-20th century. We will pay special attention to the rise of a new political economy often characterized as neoliberal, and we will discuss how scholars within and beyond political science make sense of these changes.  
Instructor(s): N. Jabko  
Writing Intensive.

AS.190.653. Organizations.  
Graduate students only. "Organizations are the fundamental building blocks of economic, social and political life. This course will examine how different disciplines (sociology, economics, political science) approach the problem of explaining how organizations operate, as well as exploring the structure and development of a very wide range of organizations (firms, interest groups, charitable foundations, universities, militaries, bureaucracies, international organizations, and professions)."  
Instructor(s): S. Teles  
Area: Social and Behavioral Sciences.

AS.190.656. Sovereignty: Historical Perspectives and Contemporary Issues.  
This seminar provides an in-depth exploration of the concept of sovereignty by examining its historical development and its use in international relations scholarship. Our discussion will also be informed by works in political theory and the international law literature. The course is open to advanced undergraduate students and graduate students. Co-listed with AS.190.408  
Instructor(s): S. Schmidt  
Area: Social and Behavioral Sciences  
Writing Intensive.

AS.190.659. Postcolonial Political Economy.  
There is currently an intermittent and under-examined relationship between postcolonial studies and critical political economy. The aim of this module is to help you to account for this relationship on your own terms. We will examine the entanglements of capitalism and colonialism by building unconventional conversations between classical political economists (as well as their 19th century successors) and thinkers and traditions invested in confronting colonialism and its legacies. We will focus primarily on regions affected by (Anglo) settler colonialism — especially the Americas and the Pacific.  
Instructor(s): R. Shilliam.

This graduate seminar will conduct close readings of a wide swath of the writings of Jacques Rancière and Arthur Bentley, considering how each eschews the style and mode of argumentation of today’s “normative” political theory. Grad students only.  
Instructor(s): S. Chambers  
Area: Social and Behavioral Sciences.

AS.190.662. Technology and Politics.  
Grad students only.  
Instructor(s): D. Deudney  
Area: Social and Behavioral Sciences.

AS.190.666. Political Economy Of Development.  
Graduate students only.  
Instructor(s): E. Chung.
AS.190.667. Reconstructing International Relations Theory. 
In this class, we will study IR theory in a reconstructive mode. We will return to foundational texts in light of more recent theoretical developments both in IR and social thought more broadly. Our goal will be to critically assess the basic epistemological, ontological, and historical assumptions of IR theory while charting paths for its possible futures. Instructor(s): B. Allan.

AS.190.668. Nuclear Weapons and World Order. 
Instructor(s): D. Deudney 
Area: Social and Behavioral Sciences.

AS.190.670. Capitalism, Marx and the Value-Form. 
This seminar will explore the capitalist value-form (Wertform) by way of a reading of Marx and a number of value-form theorists. Grad students only. 
Instructor(s): S. Chambers 
Area: Social and Behavioral Sciences 
Writing Intensive.

AS.190.672. Money. 
What is money? And given its absolute centrality to economics and politics, shouldn't political economy and political theory hold answers to this question? Instead, the history of both neoclassical economics and modern political thought is marked by eschews or refusals of it or its importance. This graduate seminar will explore the theory and politics of money, through critical readings of orthodox theories, engagements with heterodox political economy, and encounters with contemporary political theory. 
Instructor(s): S. Chambers.

AS.190.675. Neoliberalism. 
Readings on the history, theory, and politics of neoliberalism, from midcentury to the present. 
Instructor(s): A. Burgin; N. Jabko 
Writing Intensive.

AS.190.676. Field Survey of International Relations. 
This course provides a scaffold for the study of international relations theory, organized historically and by major approaches. The focus is on close reading and discussion of exemplars of important bodies of theory. Intended for doctoral students with IR as their major or minor field. Graduate students only. 
Instructor(s): R. Marlin-Bennett 
Area: Social and Behavioral Sciences.

AS.190.678. Law and Politics. 
As a field, Law and Politics has evolved from the study of constitutional law and judicial politics to the political behavior of judges and their associates to the study of law and society, the operation of law and courts "on the ground" in the international arena as well as in the United States, historical institutionalism, and the carceral state. In this graduate course, we will review some of the classic texts in the field, with a focus on the tension between legal institutions and democratic politics. In particular, we will examine how that tension is manifest in the foundations of the American political system and in critical reflection on contemporary practices of American democracy. Students will turn in response papers every week on the reading. In addition, there will be two 10-20 page papers due during the semester. Graduate Students Only. 
Instructor(s): E. Zackin; J. Culbert 
Area: Social and Behavioral Sciences.

AS.190.679. The Political Poetics of Walt Whitman and Henry Thoreau. 
Examination of the works of Thoreau and Whitman with an eye toward how their texts engage in subjectivity-formation and the inducement of publics. What are the powers and limits of their practices of language, including myth-making, affirmations of nonhuman agencies, and nature-writing? Grad students only. 
Instructor(s): J. Bennett 
Area: Social and Behavioral Sciences.

AS.190.680. Race and the Politics of Punishment in the US. 
Contact with criminal justice has become a primary way that many Americans see and experience government, particularly those from race-class subjugated communities. Yet, our field has been slow to appreciate the development of the carceral state or to consider its manifold impacts for citizenship. In this graduate seminar, we will survey key debates around punishment, state violence, and surveillance, with a particular focus on research that takes institutional development, history, and racial orders seriously. Why did the carceral state expand in "fits and starts" and with what consequence for state-building? We explore its (racialized and gendered) relationship to other key systems: foster care, social provision, labor relations and the labor market, and immigration enforcement. A core preoccupation of this course will be to understand the ways in which the criminal justice system "makes race" and how debates about crime and punishment were often debates about black inclusion and equality. How does exposure to criminal justice interventions shape political learning, democratic habits, and racial lifeworlds? In addition to policy, political discourse, and racial politics, we will employ works from a range of fields — history, sociology, law, and criminology — and a range of methods (ethnography, historical analysis, quantitative and qualitative). Required books include: Khalil Muhammad's Condemnation of Blackness: Race, Crime, and the Making of Modern Urban America, Elizabeth Hinton's From the War on Poverty to the War on Crime, David Oshinsky's Worse than Slavery: Parchman Farm and the Ordeal of Jim Crow Justice, Bruce Western's Punishment and Inequality in America, and Michael Fortner's Black Silent Majority: The Rockefeller Drug Laws and the Politics of Punishment. 
Instructor(s): V. Weaver 
Writing Intensive.

AS.190.681. Strategy in Politics. 
Political scientists today increasingly recognize the importance of strategy in politics. Yet they often implicitly adopt a rationalist conception of strategy directly inspired by game theory. This course will discuss the usefulness of this conception, and explore the possibility that alternative conceptions of strategy might also (and perhaps better) illuminate what a strategy is in real-world politics. We will read texts from a variety of disciplines - political science/political economy, but also sociology, organization theory, psychology, and history. Graduate Students Only. 
Instructor(s): N. Jabko 
Area: Social and Behavioral Sciences.

AS.190.682. A Short History of Eccentric Theory: Lucretius, Spinoza, Kafka, Serres. 
An examination of the political insights yielded by the distinctive modes of inquiry pursued by these four thinkers/writers. 
Instructor(s): J. Bennett 
Area: Social and Behavioral Sciences 
Writing Intensive.

AS.190.683. Research Seminar/Political Parties. 
Instructor(s): R. Katz 
Area: Social and Behavioral Sciences.
AS.190.686. The Institutions of Capitalist Democracy.
Instructor(s): N. Jabko
Area: Social and Behavioral Sciences.

AS.190.687. Philosophy and the Anthropocene.
How do philosophers such as Heidegger, Whitehead, Deleuze and Braidotti help us to think about the dynamics of the Anthropocene? What do anthropologists and geoscientists such as Anna Tsing, Bruno Latour, Jason Moore, Michael Benton, Jan Zalasiewics and Wally Broeker--teach those philosophies and us about the contemporary condition? Class presentations on assigned readings, seminar paper, and class discussions.
Instructor(s): B. Allan; W. Connolly
Area: Social and Behavioral Sciences

AS.190.688. Micro- and Meso-Level Approaches to Political Violence.
How is violence organized, produced, and understood? This course will introduce graduate students to advanced scholarship on political violence and will encourage students to explore the relationship between violence, agency, and structure. Central themes include: mobilization and recruitment; the emergence and behavior of armed organizations (e.g. militant groups, pro-state militias); ethnic violence; civilian targeting; gender-based violence in war; election violence; and vigilantism. The class will challenge students to critically examine violence as an outcome, political process, and as an indicator of underlying relationships and social structures.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.690. Statelessness.
Instructor(s): J. Culbert
Area: Social and Behavioral Sciences.

AS.190.693. Planetary Interdependence and World Governments.
Intensive exploration of alternative global political architectures for high levels of security, ecological and internet interdependence.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.694. Comparative State Formation.
The course examines causes, effects and paths of state formation in history and across societies. Weberian and Marxist analyses of the emergence of the modern state in Western Europe are a necessary point of departure. To develop a stronger comparative perspective, however, the course will analyze theoretical approaches and historical studies on state formation in the Ancient World (Mesopotamia, Egypt and China) and in modern Latin America and Africa. The course will also examine whether variations in state formation have a systematic effect on state capacities and political regimes. Graduate Students Only.
Instructor(s): S. Mazzuca.

AS.190.695. Politics, Time and the Tragic.
What can tragic visions teach us today? What cosmological and ontological issues are posed to late modern life by tragic traditions? What conceptions of time and political aspiration can inhabit a tragic vision? What contending conceptions of politics grow out of them? This seminar starts with Hesiod’s Theogony, moves through the Sophocles Trilogy, examines attempts to rework the tragic by Friedrich Nietzsche, Bernard Williams, Judith Butler, Bonnie Honig, and James Baldwin, returns to these issues through King Lear, and explores again the issues that emerge through a close engagement with Deleuze’s philosophy and time in Cinema II.
Instructor(s): W. Connolly
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.697. Norm and Change in International and Comparative Perspective.
This seminar will explore the dynamics behind the origin and demise of foundational normative understandings that inform action in a variety of issue areas. Readings will be drawn from the international relations and comparative politics literatures, with attention focusing on the themes of power, discourse, and practice as well as on how these literatures relate to one another.
Instructor(s): N. Jabko; S. Schmidt
Area: Social and Behavioral Sciences
Writing Intensive.

AS.190.800. Independent Study.
Instructor(s): Staff.

AS.190.801. Independent Study II.
Instructor(s): D. Deudney
Area: Social and Behavioral Sciences.

Instructor(s): Staff.

AS.190.890. Independent Study.
Instructor(s): Staff.

AS.190.893. Political Science Practicum.
Instructor(s): R. Katz.

AS.191.102. Diasporas in World Politics. 3.0 Credits.
This course explores the role of diasporas - ethnic, religious, and migrant groups - in world politics. What impact do diaspora communities have on the foreign policy of their country of residence or country of origin? What is the involvement of diaspora communities in civil wars, ethnic conflicts, and conflict resolution? How does this kind of transnationalism affect international order?
Instructor(s): Y. Abramson.

AS.191.103. The Politics of Crime and Punishment. 1.0 Credit.
In this class, we will ask questions about the relationship between crime, law, and punishment in modern democratic states. Students will be introduced to dominant modern approaches to understanding punishment and modern state’s power to enforce the law. In light of these theoretical approaches, we will consider the connection between criminalization, punishment, and politics in contemporary United States.
Instructor(s): T. Bardelli.
AS.191.104. Covert Action in International Politics. 3.0 Credits.
This course examines covert action from the Second World War up until the present. Covert action is any activity undertaken by a sponsor seeking to influence a target while remaining anonymous. We will be covering some of the more prominent examples of the use of assassinations, coup d'états, bribery, blackmail, propaganda, election rigging, cyber-war, and economic sabotage. By the end of this course you should have a solid and detailed empirical knowledge of a large number of covert operations from around the world. You should be familiar with the definitions and categories for covert action and be able to engage with debates on the utility of covert action and the ethical and legal issues involved in using covert activities.
Instructor(s): T. Tutunji
Writing Intensive.

AS.191.106. Freshman Seminar: Mass Incarceration and American Politics. 3.0 Credits.
This freshman seminar examines how the United States became the world's leading jailer, the impact of mass incarceration on American politics, and the dynamics of reform. Points of emphasis include elections, federalism, and race.
Instructor(s): D. Dagan de Picciotto
Writing Intensive.

AS.191.119. Freshman Seminar: Thinking Critically through the Global South. 3.0 Credits.
This seminar exposes students to tools for thinking critically about life and politics by introducing them to contemporary debates in International Relations and Political Theory that have been proposed by authors from the Global South. Topics include, but are not limited to: development, postcolonial studies, environment, knowledge production, and gender and sexuality.
Instructor(s): T. Zille
Area: Social and Behavioral Sciences.

AS.191.201. Love in Politics, Politics in Love. 3.0 Credits.
In much of political science, political power is assumed to flow from fear. Using classic texts in political theory, this class will consider the existence of a different kind of political power, one flowing from love. The following questions will structure the course: What are the powers and forms of love? Are political bonds and loving bonds related? Class discussions will draw from a variety of sources, including readings by Hobbes, Nygren, Plato, Augustine, Rousseau, Engels, Jordan, and Berlant.
Instructor(s): M. Helsel
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.191.206. Violence, Fast and Slow. 3.0 Credits.
Is poverty a form of violence? What about lead contamination in drinking water? How about rising sea levels? Do abrupt forms of violence supervene on slower forms? Can political struggles around violence be fast and slow? Can peacekeeping efforts? In this class, we read about violence, fast and slow
Instructor(s): J. Mohorich
Area: Humanities, Social and Behavioral Sciences.

AS.191.222. Politics and Nature. 3.0 Credits.
Introduces students to contemporary discussions in environmental political thought by exploring the concepts “politics” and “nature” in Western political thought using films, novels, and traditional texts. Focusing on issues such as climate warming, decreases in species biodiversity, and human overpopulation, the course explores how various other moments in the Western political tradition conceived the relationship between politics and nature. The goal is to ask how insights from these other moments might help us today.
Instructor(s): Z. Reyna
Area: Humanities.

AS.191.311. Who Are You Laughing At?! Political Theories of Pluralism and Laughter. 3.0 Credits.
Laughter in recent years has emerged as a key experience through which diverse political interests, beliefs, and identities form, interact, and compete with one another. From Donald Trump's claims that China, Mexico, and North Korea "are laughing at us," to the 2015 Charlie Hebdo attacks and the 2010 Jon Stewart rally on the National Mall, the question "who are you laughing at?!" lies at the center of contemporary political struggles. This course puts various philosophical, historical, and literary accounts of laughter into conversation with classic and contemporary theories of pluralism to explore how practices of laughter construct, preserve, and transform barriers of political difference today.
Instructor(s): P. Giamario.

AS.191.312. The Politics of Personal Life: Work, Family and Consumption. 3.0 Credits.
This course explores various theoretical attempts to broaden the meaning of “politics” by examining three spheres of action typically equated with “personal” life: work, family, and consumption. The following questions orient our inquiry: what does the phrase “the personal is political” mean, and what sort of political solutions does it typically endorse? What can we learn about politics by studying family dynamics? Why do Americans work so much, and how does “work ethic” discourse promote punitive social policies? What is the relationship between our everyday acts of consumption and larger political phenomena such as climate change and racialization processes? What can theories of intersectionality tell us about such dynamics?
Instructor(s): J. Masin-Peters.

AS.191.313. Why We Punish. 3.0 Credits.
A multidisciplinary exploration of the justifications and problems associated with punishment broadly defined, including prison sentences, personal acts of revenge, and military reprisals. Course texts will include international court cases, philosophical texts, and classic legal thinkers, in addition to fiction and news articles. Particular attention will be paid to when punishment is (or is not) cruel, deserved, or proportionate; when restraint should be shown; and whether it is desirable to abolish it altogether. Case studies will include the practice of solitary confinement, cycles of retaliatory violence in communal conflicts, the death penalty, and International Criminal Court efforts to punish perpetrators of war crimes and crimes against humanity. Writing intensive.
Instructor(s): J. White
Writing Intensive.
AS.191.315. The Domestic Politics of Israel. 3.0 Credits.
Israel's politics and history are complex, involving multiple military conflicts, domestic struggles and dynamic international relationships. This course will focus on Israel's domestic politics by tracing the story of the development of its party system and the parties the compose it. A parliamentary democracy with a proportional representation electoral system, Israel's party system includes multiple parties who represent the various segments of Israeli society. What are the origins of this party system and the parties that compose it? What changes have they experienced and what are the factors that influence those changes? Who are the important actors and what might be motivating them? These questions and others will serve as our guide on a journey to a better understanding of Israel's domestic politics.
Instructor(s): A. Dolinsky
Writing Intensive.

AS.191.323. Transing Politics. 3.0 Credits.
This course is designed to explore transgender politics through multiple valances and to ask what does it mean for us to to trans politics. Although there have been countless examples of gender variance throughout history, the term transgender has only recently emerged to describe a variety of such identities and experiences. Throughout this course we will examine the politics of transgender lives, how they are represented at large, and how transgender individuals represent themselves. To do so we will employ diverse mediums including film, literature, and comics in addition to more standard Political Science texts.
Instructor(s): P. Moskowitz
Writing Intensive.

AS.191.326. International Politics from the Global South. 3.0 Credits.
This course focuses on the interests and preferences of developing countries in international politics. The formal and informal rules of international politics tend to favor the interests and preferences of powerful countries: richer states, with better technologies and superior military capabilities. Sometimes, however, the interests and preferences of great powers do not align with what the rest of the countries want, especially with states in the Global South. We will analyze what developing countries do to restrain the leeway of powerful countries, particularly when their interests and preferences conflict. The course is divided into four main sections: a review of the structure of international politics and the Global South, hierarchies of authority, tools to restrain great powers, and actors that try to constrain the leeway of these countries. Given the nature of the material that will be discussed, a previous course on either Global Security Politics or Contemporary International Politics is recommended.
Instructor(s): J. Rodriguez Aquino.

AS.191.327. By Any Means Necessary? Political Theories of Violence. 3.0 Credits.
Questions of violence are as old as questions of politics itself. Are politics and violence essentially the same or is politics fundamentally non-violent? Is violence the only way to achieve political change? Has the state been a force for eliminating violence and securing freedom or has it only created more conflict? Who gets to define what counts as violent, and for what purposes? This course engages such questions through a theoretical lens, often focusing on political actors and activists responding on the ground to these pertinent questions. It asks students to reconsider what they normally think violence, non-violence, and politics are. We will particularly investigate this angle through the lens of race and colonialism—reading such figures as Michel Foucault, Franz Fanon, Mao Zedong, Gandhi, Martin Luther King Jr., Malcolm X, Angela Davis, and Ida B. Wells—as well as focusing on histories of state formation and state violence.
Instructor(s): Q. Lester
Writing Intensive.

AS.191.335. Arab-Israeli Conflict. 3.0 Credits.
The course will focus on the origin and development of the Arab-Israeli conflict from its beginnings when Palestine was controlled by the Ottoman Empire, through World War I, The British Mandate over Palestine, and the first Arab-Israeli war (1947-1949). It will then examine the period of the Arab-Israeli wars of 1956, 1967, 1973, and 1982, the Palestinian Intifadas (1987-1993 and 2000-2005); and the development of the Arab-Israeli peace process from its beginnings with the Egyptian-Israeli treaty of 1979, the Oslo I and Oslo II agreements of 1993 and 1995, Israel's peace treaty with Jordan of 1994, the Road Map of 2003; and the periodic peace talks between Israel and Syria. The conflict will be analyzed against the background of great power intervention in the Middle East, the rise of political Islam and the dynamics of Intra-Arab politics, and will consider the impact of the Arab Spring.
Instructor(s): R. Freedman
Area: Social and Behavioral Sciences.

AS.191.344. Belonging to Nature in the Anthropocene. 3.0 Credits.
This course explores debates in contemporary environmental political thought concerning humanity's relationship to nature in the Anthropocene. The Anthropocene refers to the era in which "human" activity becomes a force of "nature"—when the impact of human activity on natural processes manifests itself in the stuff of the Earth. For many of us, these planetary transformations are hardly noticeable in day-to-day life, but they are dramatic: we are living through the Earth's sixth mass extinction. What is our relationship to these transformations? Do we have the power to stop them, or at least to minimize their harmful effects? Course readings and films introduce multiple visions of the human/nature relationship and examine the responses they recommend to these and other questions. The political stakes of these visions are brought to light as we consider: How do visions of the human/nature relationship shape and texture core political concepts like freedom, agency, responsibility, and progress? What do they suggest about the strategies most likely to motivate action amid the uncertainty of the Anthropocene? How do these visions subtly (and not so subtly) relegate some to the realm of "nature" so that others can be classified as "human"?
Instructor(s): S. Erev
Writing Intensive.
We will explore the rise of the national security state in the United States, and the constitutional challenges this establishment posed and continues to pose for Constitutional government in the modern day republic. We will also examine the role of the United States in world politics with a special emphasis on how the United States changed as a result of the international system in the 19th and 20th centuries.
Instructor(s): R. Freedman
Area: Social and Behavioral Sciences

AS.191.354. Congress and Foreign Policy. 3.0 Credits.
This course is an introduction to the Congressional role in foreign policy. The Constitution grants the President the authority to conduct foreign policy. Yet it also gives Congress a substantial role in the shaping of foreign policy. The distinct roles are not always clear, creating an inherent tension between these two branches of government and efforts on each side to increase their power. This class will address the “rules of the road” in conducting American foreign policy and how they change. The class will go beyond theory to include case studies that show the tension between Congress and the Administration – including the Iran Agreement, Climate Change, sanctions on Russia and American policy towards Cuba. The course will include guest lecturers who work in Congress on the various aspects of foreign policy – including appropriations, intelligence, oversight and investigations. We will address the Congressional role in ratification of treaties and in declaring war. The class will consider the different ways that each branch of government approaches human rights, arms sales and sanctions. The class will also address the domestic political aspects of foreign policy – including the role of advocacy groups and special interests and the political use of Congressional investigations.
Instructor(s): J. Frifield

AS.191.362. Covert Action in International Relation. 3.0 Credits.
This course introduces the use of covert action in relations between states. We will cover various cases with different sponsoring and targeted countries and from different time periods. The class ends with a review of the latest Russian covert activity against the United States.
Instructor(s): T. Tutunjian
Area: Social and Behavioral Sciences.
Writing Intensive.

Instructor(s): Staff

AS.191.389. The Politics of Race and Ethnicity in the Postcolonial Society. 3.0 Credits.
The postcolonial society offers a unique terrain for the study of comparative racial politics, providing a setting for which racial and ethnic politics often take place between predominately non-white groups. In this course, students will examine contemporary understandings of the concepts of race and ethnicity and how they are deployed politically in the postcolonial society, enabling students to make deeper explications about the relationship between race, ethnicity and national inclusion as global phenomena that are the persistent and widespread legacies of colonialism, nationalism and white supremacy. Specifically, students will become familiar with the processes of colonization and decolonization--as well as postcolonial theories of resistance--that structure group politics today, drawing upon theoretical sources from Africa, Asia and the Caribbean. These theoretical and historical tools will be used to study racial and ethnic politics across a range of postcolonial cases, including Indonesia, Mauritius, Fiji, Trinidad, Colombia and Brazil.
Instructor(s): E. Thornton
Writing Intensive.

AS.191.405. Modernity and the Slaughterhouse: Labor, Violence, and Animals in Contemporary Society. 3.0 Credits.
Steven Pinker opens his influential bestseller The Better Angels of Our Nature with the claim that "If the past is a foreign country, it is a shockingly violent one," going on to argue that the contemporary age is one marked by relatively more peace and less violence than ever before. Drawing on a long tradition of optimist thinkers, he credits this civilizational progress to a combination of the intellectual legacy of Enlightenment-humanism, greater faith in scientific rationality and technological progress, a strong system of states and social institutions, and the development of democracy and the liberal market economy. For Pinker, this account holds as much for humans as it does for animals, and he goes so far as to claim the emergence of animal rights as "another rights revolution" akin to civil rights and women's rights. But does this account of modern society hold up under scrutiny? Or, more specifically, where does it fail? And how exactly does contemporary society relate to different forms of violence (against humans and animals) that it has not done away with? The historical processes described by Pinker have not only drastically changed human society, but they have also impacted how we interact with animals. The United States today produces and consumes more meat than ever, but most Americans live at an increasing geographic and perceptual distance from animals and the humans who work with them, relying on a system of industrial production and a complex division of labor. This course approaches the politics of this distribution of labor, violence, and human-animal relations from a site rarely considered in political analysis: the modern slaughterhouse. It engages with this institution as a historical and cultural object, using the story of its emergence and operation to ask broader questions about the politics of social change. We will draw on an interdisciplinary range of academic and non-academic works to explore a range of questions about the relationships between institutions and rationality, visibility and invisibility, hygiene and marginalization, and labor and society, and to examine the narratives ostensibly peaceful, liberal democracies tell themselves about violence, history, and progress.
Instructor(s): Staff
Writing Intensive.

AS.191.420. Are We Living In an Age of Collapse?. 3.0 Credits.
This course will investigate the themes of civilizational crisis and collapse with the primary goal of understanding the "perfect storm" of converging crises confronting humanity in the 21st century, including earth system, economic, food and energy crises. While these crises are often studied in isolation from each other, this course will engage with more holistic approaches to study them as interrelated components of a deeper system-wide crisis in the contemporary world order. The first part will explore theories of world-systems, political ecology, and collapse in historical perspective. The second will focus on specific dimensions of the contemporary global crisis and their relations, in particular the earth system crisis, the global economic crisis, food and energy crises. The third part will then explore the implications of these crises for the future of world order by investigating possible scenarios, both for the world-system as a whole and for the United States in particular, and then by evaluating different responses and proposed solutions to our critical civilizational condition.
Instructor(s): M. Albert.

Cross Listed Courses
History of Art
AS.010.382. The Politics of Display in South Asia. 3.0 Credits.
Through examining collecting, patronage, colonial exhibitions, and museums, this course examines how South Asia has been constructed in practices of display. Themes: politics of representation, spectacle, ethnography, and economies of desire related to colonialism and the rise of modernity. Cross-list with Anthropology, Museums and Society and Political Science.
Instructor(s): R. Brown
Area: Humanities
Writing Intensive.

Anthropology
AS.070.278. "Cutting (out) the Middleman" ?. 3.0 Credits.
Middleman are popularly conceived as a person who acts as an interface between two parties, usually for a fee. The figure of the middleman, however is seen in a negative light as an exploitative element. Rather than assume the middleman to be a given entity, this course takes a detour into ethnography, fiction and film to rethink how specific social milieus shape practices, politics and networks of mediation that exceed the physical figure itself. This course will thus, cut the middleman "out" of everyday life and draw mediation into our field of vision.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.

AS.070.294. Political Anthropology of Africa. 3.0 Credits.
The course will explore classical and contemporary ethnographies of the political in Africa, examining how their authors address issues of power, hierarchy and symbol. We will study various articulations of state, ethnicity and community that are analyzed by observing relations between power and resistance or between law, economy and violence through war, custom and ritual. The seminar will also address the way in which Africa has been constituted as a key source of the sub-field of political anthropology through colonial trajectories, postcolonial detours and the political imagination of the past and the future.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences.
AS.070.333. Theologies of Political Life. 3.0 Credits.
This course explores the relationship between modern political forms and theological traditions. Looking at developments both in the West and the postcolonial world, we will examine the multiple ways in which theological traditions have continued to inform how political life is conceived and pursued. In particular, we will focus on the relation between liberalism and the Christian tradition; the turn to messianism in critical theory; the transformation of the shari?a into a legal form; and its imbrication in anti-colonial politics
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.417. Political Spirituality. 3.0 Credits.
This course explores forms of political action that have emerged at the interface of modern revolutions with religious traditions. It focuses on the Middle East during the twentieth century and the civil rights struggle in the American south. We will attempt to trace the genealogy of these forms of action in the Islamic and Christian traditions, as well as examine their influence on the political thought of our own time.
Instructor(s): S. Al-Bahloly
Area: Humanities, Social and Behavioral Sciences.

AS.070.621. An Ontological Turn?.
Recent years have seen a number of ambitious and controversial efforts to find, in ontology, a means of surpassing the inherited humanism, culturalism, and essentialism of anthropology. This course will critically examine this proposition of a fundamental “turn” in our thinking, juxtaposing recent work on matters of perspectivism, materialism, relationality, and divinity with earlier attempts in anthropology to grasp being and becoming otherwise.
Instructor(s): A. Pandian.

History
AS.100.237. Freshman Seminar: Impeachments and Beyond: Law, Justice, and Politics in Latin America. 3.0 Credits.
This course is an introduction to legal ideas and institutions through the Latin American political experience. By the end of this course, students will be equipped with the fundamentals of Latin America’s long political history (from colony to present) and will be able to identify how legal ideas and institutions change over time. Students will also gain insights on debates and conversations on the relationship between law, justice, and politics that go beyond Latin America’s history.
Instructor(s): A. Caso Bello
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.295. American Intellectual History since the Civil War. 3.0 Credits.
Readings in American social thought since 1865, ranging across developments in philosophy, literature, law, economics, and political theory.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.343. Diaspora, Nation, Race, and Politics. 3.0 Credits.
For millions of people across the globe, political fate in the 20th century was defined at the intersection of diaspora, race, and nation — and this may be true in the 21st century as well. This course, a collaborative effort involving a historian and a political scientist, explores the parallels and divergences in the deployment of these terms in nationalist and transnational mobilization, literature and aesthetics, and group identity formation in Eastern Europe, Africa and the New World of the Americas. Set against the backdrop of the fall of significant empires in the late 19th and early 20th centuries, we will explore themes of migration, human rights, the nation-state system, and racism through history, political sociology, and political and social theory. We will pay particular attention to the theoretically exemplary Jewish and Black experiences of diaspora, race, and nation, engaging both with how those experiences were specially shaped by the imposition of national and racial logics and with Black and Jewish politics and thought in relation to those categories. Readings include Max Weber, W. E. B. Du Bois, Booker T. Washington, Theodor Herzl, Hannah Arendt, Benedict Anderson, Rogers Brubaker, Andrew Zimmerman, Michele Mitchell, David Scott.
Instructor(s): K. Moss; M. Hanchard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.404. John Locke. 3.0 Credits.
Seminar style course in which John Locke's major works will be read intensively, together with some of his contemporaries' works, and select scholarly interpretations.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.699. Neoliberalism.
Readings on the history, theory, and politics of neoliberalism, from midcentury to the present.
Instructor(s): A. Burgin
Area: Humanities, Social and Behavioral Sciences.

Philosophy
AS.150.404. The Idea of Power. 3.0 Credits.
The Idea of Power surveys seminal texts in the history of political thought on the nature, promise, and dangers of political and social power; it also critically engages contemporary texts on race and gender power relations
Instructor(s): C. Lebron
Area: Humanities.

AS.150.462. Islamic Political Philosophy. 3.0 Credits.
An introduction to the history of Islamic political philosophy, primarily focused on two flashpoints of encounter between the religion of Islam and other philosophical/political systems—an early one with ancient Greek philosophy (especially in the works of Plato and Aristotle), and a period of interface with modern Western secular political thought, from the late 19th century to present. Our goal will be to try to understand some of the varying responses in each period as Muslim thinkers seek authentic engagement with external and internal trends, both religious and philosophical. The focus will be on primary texts from philosophically engaged thinkers (who may or may not consider themselves philosophers).
Instructor(s): S. Ogden
Area: Humanities.
International Studies

AS.192.320. Colonialism and Foreign intervention in the Middle East and Africa. 3.0 Credits.
How did colonial rule and post-colonial foreign intervention shape the history and politics of states in the Middle East and Africa? The first part of this course focuses on the colonial period, examining the era of conquest, considering how and whether colonial rule differed from other types of ruling arrangements, and studying how people in colonized territories reacted to conquest and foreign rule. Part Two focuses on post-colonial foreign military interventions. Part Three considers the potential long-term consequences of colonialism and foreign intervention. The course focuses on British, French, and American imperialism.
Instructor(s): A. Lawrence
Area: Social and Behavioral Sciences
Writing Intensive.

AS.192.401. Political Violence. 2.0 Credits.
This class will function predominantly as a discussion seminar that uses the case of the Lebanese Civil War to examine the causes, duration, and dynamics of civil war as well as the debates surrounding foreign intervention and peacebuilding. Themes include: ethnic violence; economic explanations for civil war; civilian targeting; intra-rebellion dynamics; sexual and gender-based violence; election violence; occupation; peacekeeping; and the Responsibility to Protect.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences

AS.192.402. Military Organizations in the Middle East and North Africa. 2.0 Credits.
This course will examine the diverse roles state and non-state military organizations play in MENA politics, economics, and society. Each week will use an organizational case study as a window into core themes such as military involvement in state economies, militia politics, or combatant discipline in war.
Instructor(s): S. Parkinson
Area: Social and Behavioral Sciences

German Romance Languages Literatures

AS.211.174. Media of Propaganda. 3.0 Credits.
Today, promoting a particular political or personal point of view is not viewed as "propaganda," but rather as building a community of equally minded people. But where do we draw the line, and when does the use of a medium in service of a certain message become intrusive and misleading? What role do democracy and cultural values play in this use or abuse of media? In this class the term "propaganda" will be evaluated carefully and applied to such historical media case studies as the informational use of the radio in World War One, Leni Riefenstahl's Nazi propaganda films, the legendary success of advertisement campaigns in the 1950s and 1960s, the AIDS movement and other mobilization strategies from the 1980s to the 1990s, and the new values of friendship and propaganda in our current facebook nation.
Instructor(s): B. Wegenstein
Area: Humanities

AS.211.341. Power and Resistance in French Political Thought. 3.0 Credits.
Even as a strong, divine-right monarchy emerged in France, following the Renaissance wars of religion, rebellious French thinkers never stopped questioning the foundations of power. They focused critically not only on the claims of authority issuing from the top, but also on the submissiveness of the governed and the reach of propaganda. This course examines how power shapes minds and bodies, from absolutism to the Revolution, to democratic laïcité. Readings include works by La Boétie, Montaigne, Loyseau, Bayle, Rousseau, Saint-Just, Maistre, Tocqueville, Foucault, Lefort, Rancière and the Assemblée Nationale. Readings and discussion in English.
Instructor(s): E. Russo
Area: Humanities

AS.211.394. Brazilian Culture & Civilization. 3.0 Credits.
The course is taught in English. No knowledge of Portuguese is required. This course is intended as an introduction to the culture and civilization of Brazil. It is designed to provide students with basic information about Brazilian history, art, literature, popular culture, theater, cinema, and music. The course will focus on how indigenous Asian, African, and European cultural influences have interacted to create the new and unique civilization that is Brazil today. The course is taught in English, but ONE extra credit will be given to students who wish to do the course work in Portuguese. Those wishing to do the course work in English for 3 credits should register for section 01. Those wishing to earn 4 credits by doing the course work in Portuguese should register for section 02. The sections will be taught simultaneously. Section 01: 3 credits Section 02: 4 credits (instructor's permission required)
Instructor(s): F. De Azeredo Cerqueira
Area: Humanities
Writing Intensive.

AS.212.341. Power and Resistance: Approaches to French Political Thought. 3.0 Credits.
Even as a coherent, rational conception of state power emerged in France in as early as the Renaissance, French thinkers never stopped challenging the ways by which power justified itself in order to foster obedience and consensus. In so doing, they focused critically as much on the claims of sovereignty issuing from the top as on the willingness of the governed to submit to them. The course will examine the dialectic between the legitimation and delegitimation of power, from the Renaissance wars of religion to the Revolution and beyond: the haunting fear of the corruption and death of the political body; the notion of permanent crisis; the right to revoke the social contract; the reach of power in shaping minds and bodies. Readings may include works by La Boétie, Bodin, Bayle, Rousseau, Sade, Saint-Just, Constant, Maistre, Tocqueville, Foucault, Lefort and Rancière. Readings and discussion in English.
Instructor(s): E. Russo; W. Anderson
Area: Humanities
AS.212.470. Censorship in Language and Practice. From the Ancien Regime to Democracy. 3.0 Credits.
An exploration of the boundaries of acceptability when speaking about religion, government, sexuality and gender. Students will learn about the political, theological and legal basis of blasphemy and punishable behavior, and how they have changed from the time of divine-right monarchy to contemporary laïcité. Selected readings ranging from the clandestine culture of free-thinkers and rakes in the 17th century, to the trials and causes célèbres of the Enlightenment, to modern-day democratic polemics.
Prerequisites: AS.210.302
Instructor(s): E. Russo
Area: Humanities.

AS.213.705. Hegel’s Phenomenology of Spirit.
We will study key passages of The Phenomenology of Spirit from a queer-feminist perspective and engage with some of the feminist scholarship on Hegel
Instructor(s): K. Pahl
Area: Humanities.

AS.216.398. Zionism: Literature, Film, Thought. 3.0 Credits.
This course studies the relations between modern Hebrew and Israeli culture and Zionism. Based on a close reading of both literary and non-literary Zionist texts, we will explore the thematic, social and political aspects of the Zionist movement. The course focuses on primary sources and its main goal is to familiarize students with the various ways in which Zionism was formed and understood. In the last part of the semester we will investigate the different meanings of Post-Zionism through contemporary literary and non-literary texts as well as recent Israeli films.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities.

Sociology
AS.230.275. Revolution, Reform and Social Inequality in China. 3.0 Credits.
This course explores various aspects of social inequality in China during the Mao Zedong and the post-Mao reform eras. We will examine inequality within villages, the rural/urban divide, urban inequality, education and health policies, and gender and ethnic inequality. Each of these issue areas will be tackled analytically, but the aim is also to understand what it was/is like to live in China during and after the Mao era. Formerly offered as AS.230.321.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.318. State and Society in Modern India. 3.0 Credits.
This course examines the complex, at times conflicting, relationship that has emerged between Indian seats of power from above and Indian expressions of society from below. Attention will be placed on the period between 1947 to the present.
Instructor(s): R. Agarwala
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.357. Baltimore and Beyond. 3.0 Credits.
This course uses the city of Baltimore as a lens through which to explore issues of urban inequality. We will focus on Baltimore’s history of racial segregation and concentrated poverty, and its effect on the social and economic well-being of the city and its residents, with attention to education, employment, health and crime. Students will learn how to employ Census data, GIS approaches, and sociological research to inform questions about population change, inequality and the distribution of resources across the city and metropolitan region. Students will also work on one or more policy relevant studies based in Baltimore, including: a project on abandoned and vacant housing, a desegregation intervention, and a longitudinal study of inner city youth. Finally, students will become familiar with Baltimore City’s programs and policy approaches to addressing the city’s most pressing problems, and will design innovative and effective and innovative solutions as part of their course assignments. Enrollment restricted to Social Policy minors only.
Prerequisites: Students that took AS.360.372 may not take AS.230.357
Instructor(s): S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.374. Poverty and Public Policy. 3.0 Credits.
This course examines the causes and consequences of U.S. urban poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations scholars have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Enrollment restricted to Social Policy minors only.
Prerequisites: Students that took AS.360.372 may not take AS.230.374.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

East Asian Studies
AS.310.200. Economic Growth and Development in East Asia. 3.0 Credits.
The course offers an overview of the complexities of East Asia’s development experience from a variety of perspectives, and it is divided into three parts to allow students to develop expertise in one or more countries and/or policy arenas, while also cultivating a broad grasp of the region and the distinct challenges of “East Asia fast-paced, sustained economic growth.” Part I considers the origins of Asian economic development, analyses the common economic variables behind the region’s success, looks at the East Asian financial crisis and its lessons and assesses whether or not East Asian countries have learned them. Part II will focus on the development experiences of individual countries, with an emphasis on the ASEAN economies, NIEs, Japan and China. Part III considers topics of special interest to Asia, including trends toward greater regional economic cooperation, both in the real and financial/monetary sectors, and issues related to poverty, migration, and inclusiveness.
Instructor(s): G. Dore
Area: Social and Behavioral Sciences.
AS.310.305. Southeast Asia and US Security Strategy. 3.0 Credits.
This survey course is designed to introduce students to Southeast Asia – the ten member countries of the Association of Southeast Asian Nations (ASEAN) plus Australia and New Zealand. Southeast Asia is an integral part of the broader region of East Asia and a geographic bridge to the Indian subcontinent (South Asia). Southeast Asia has been one of the great success stories in the saga of modernization and development of post-colonial Afro-Asia over the last six decades. Its resulting economic importance is matched by its strategic significance given the presence of imbedded jihadist networks and the emergence of China as a regional great power and aspirant superpower. Nevertheless, the region has been largely overlooked by senior foreign policy and defense officials in Washington. This course will equip students to fill that void by examining the region from the perspective of national security strategy – broadly understood in its multiple dimensions. Students will be challenged to formulate some element of a viable U.S. national security strategy for the region.
Instructor(s): M. Ott
Area: Social and Behavioral Sciences.

AS.310.306. Domestic Politics of Contemporary China. 3.0 Credits.
This course introduces students to China’s contemporary political history and current political system. It helps students develop a critical understanding of China’s governance institutions and processes, political economy, and state-society relations. The course focuses primarily on China’s domestic politics but also covers China’s changing role in Asia and the world.
Instructor(s): Y. Yang
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.310.307. Governance and Politics in China. 3.0 Credits.
A dramatic rise of popular protests in China today has spurred lively discussions about the causes, dynamics, and impact of these protests. This course will provide students with an opportunity to understand these issues by discussing the social, institutional and cultural background of protests, major forms of protest, social groups involved, government responses, and social implications of various kinds of protests. The first part of the course will explore significant socio-economic changes since 1978 and the effects of these changes on China’s social structure and stratification. This part will also examine changes in governance and political systems in the reform era and review important theories of contentious politics. The second part will examine protests by distinct social groups, including peasants, workers, homeowners, and ethnic minority groups, pro-democratic activists, among others. This part will identify similarities and differences in the demands and actions of different groups, introduce the major forms of popular resistance, and explore how the state deals with them accordingly. The course will conclude with discussion of the outcomes of social protests in China and make a cross-national comparison between protests in China and other authoritarian states. By taking China as an example, this course will enhance students’ knowledge about forms of popular contention and government responses in an authoritarian regime as well as help students develop analytical and critical thinking skills with regard to contentious politics.
Instructor(s): Y. Li
Area: Social and Behavioral Sciences
Writing Intensive.

AS.310.352. Current Issues in US-Asia Relations: A Practitioner’s View. 3.0 Credits.
We will examine how major political events, players, norms and institutions have shaped US-Asia relations in the modern era.
Instructor(s): W. Konishi
Area: Social and Behavioral Sciences
Writing Intensive.

AS.310.401. Authoritarianism, Democracy, and Economic Development: Korea, Indonesia, and Myanmar. 3.0 Credits.
The East Asia’s “miracle growth” has not gone hand in hand with a decisive move toward democracy. This seminar explores the reasons why democratization proceeds slowly in East Asia, and seems to be essentially decoupled from the region’s fast-paced economic growth and development, and it is divided into three parts. Part I introduces the specifics of East Asia’s economic development strategies as well as key concepts of democracy, authoritarianism and military rule and the tensions between these theories and the East Asian experience. Part II will focus on the development experiences of Korea, Indonesia and Myanmar in light of what discussed in Part I of the seminar. The, Part III presents lessons emerging from the comparison of Korea’s, Indonesia’s and Myanmar’s developmental trajectories, and explore the role international organizations (e.g. ADB, EU, IMF, WB etc.) played in those choices.
Instructor(s): G. Dore
Area: Humanities.

AS.310.600. Advanced Topics in East Asian Studies.
This interdisciplinary seminar gives graduate students in East Asian Studies opportunities to present and receive comments on their dissertation chapters, prospectuses, conference papers, and/or potential publications.
Instructor(s): E. Chung
Area: Humanities, Social and Behavioral Sciences.

Interdepartmental
AS.360.247. Introduction to Social Policy: Baltimore and Beyond. 3.0 Credits.
This course will introduce students to basic concepts in economics, political science and sociology relevant to the study of social problems and the programs designed to remedy them. It will address the many inequalities in access to education and health care, unequal treatment in the criminal justice system, disparities in income and wealth, and differential access to political power. The focus will be on designing effective policies at the national and local level to address these pressing issues. This course is open to all students, but will be required for the new Social Policy Minor. The course is also recommended for students who are interested in law school, medical school, programs in public health, and graduate school in related social science fields. This course does not count as one of the required courses for the Economics major or minor, but it is required for the Social Policy Minor. Cross list with Sociology, Economics and Political Science. Freshman, Sophomore and Juniors only.
Instructor(s): B. Morgan; D. Scholzman; S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.
AS.360.331. Methods for Policy Research. 3.0 Credits.
This course will introduce students to quantitative methods for studying social policy problems. Topics to be covered include descriptive statistics and sampling, correlation and causation, simple and multiple regression, experimental methods, and an introduction to cost-benefit analysis. The emphasis will be on the selection, interpretation and practical application of these methodologies in specific policy settings, rather than with formal proofs. Skills will be reinforced by hands-on exercises using statistical software. Over the course of the semester, students will critically analyze policy reports and empirical research in a range of policy areas and learn how to present this research to a non-specialist audience. Finally, we will discuss the pros and cons of quantitative vs. qualitative methodologies. The course will conclude with group presentations that draw on all these skills. Enrollment restricted to Social Policy minors only.
Instructor(s): B. Morgan
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences

AS.360.366. Public Policy Writing Workshop. 3.0 Credits.
This workshop is designed to hone the analytical and communications skills necessary for effective formulation and advocacy of public policy. Topics include how to develop op-ed pieces and other forms of advocacy journalism, memoranda, position papers, and grant proposals. The workshop puts special stress on how to make a clear and persuasive exposition of complex or counter-intuitive policy arguments in the market place of ideas, including the challenges of writing for popular journals and communicating to specific audiences both in and out of government. Students receive intensive individual instruction, including close editing of their work and advice on how to publish or promote it in the public sphere. Enrollment restricted to Social Policy minors only.
Instructor(s): P. Longman
Area: Social and Behavioral Sciences
Writing Intensive.

AS.360.372. Poverty and Public Policy. 3.0 Credits.
This course examines the causes and consequences of U.S. urban poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations scholars have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Permission of instructor required.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.360.380. Making America Social Policy. 3.0 Credits.
This course analyzes the distinctive US welfare state in historical and comparative perspective. We begin with a survey of the policy context, an historical overview from the poorhouses through the Great Society, and a tour of welfare states across the rich democracies. We then survey developments – and explain the actual workings of policy – across jobs, education, welfare, pensions, and health care. We explore the institutional and political factors behind their divergent trajectories through conservative revival and the age of Obama. Students will write a seminar paper exploring policy development over time in a program or area of their choosing. Enrollment restricted to Social Policy minors only.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences
Writing Intensive.

Program in Latin American Studies

AS.361.330. Latin America Otherwise: Voicing Dissent. 3.0 Credits.
This course proposes to look at various Latin American texts through an unconventional lens: that of dissent. Partly inspired by French philosopher Jacques Rancière (2001), we will take as a premise the idea of dissent not simply as a moment of protest or resistance, nor of the collective plea for rights, but the moment when already given or accepted ways of living and institutional forms are unexpectedly modified by subjects not previously recognized as political. We will draw from diverse materials, ranging from political theory texts, Latin American literature, the literature on development, to the experiences of various social movements in the region. Recommended Course Background: an introductory level course in International Studies, Political Science, Anthropology, or Sociology
Instructor(s): T. Zille
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Center for Africana Studies

AS.362.175. Freshman Seminar: Remembering the Black Power Movement. 3.0 Credits.
This course explores trends, developments, contradictions, and dilemmas related to the Black Power Movement. The objective of studying this historical movement is not to engage in nostalgia, but to think through and learn the lessons of this historic social movement. An active participant in the Black Power Movement as a university undergraduate and graduate student, I do not approach this subject merely as a set of interesting intellectual issues and dynamics that can be explored with complete dispassion and objectivity. Rather, I seek to examine critically some of the contradictions and dilemmas that I, too, was caught up in, seeking to come to grips with and clarify my own participation and activities. We study these historical events with the expectation of making a positive contribution to the future.
Instructor(s): F. Hayes
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.362.340. Power and Racism. 3.0 Credits.
This course investigates the impact of white supremacy and anti-black racism, as a global system of power, on the political development of the United States of America.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.

AS.362.344. Education Politics in Urban America. 3.0 Credits.
This seminar analyzes trends, developments, and future challenges related to the politics of urban public schooling with a concentration on community political dynamics and the struggle for equal educational opportunity and quality education. The course emphasizes the impact of socioeconomic class inequality, racial/ethnic conflict, and gender politics on the changing character of public school reform since the 1954 Supreme Court decision of Brown v. Board of Education. Cross-listed with Africana Studies.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.
AS.362.412. Black Political Thought. 3.0 Credits.
This course examines how modern black political thought emerged through a series of critical engagements with Enlightenment ideas about universalism, progress, the authority of reason, and the foundations of citizenship. Course readings include texts by W. E. B. Du Bois, Angela Davis, James Boggs, Frantz Fanon, bell hooks, and others.
Instructor(s): L. Spence
Writing Intensive.

Study of Women, Gender, Sexuality
AS.363.304. Love and Its Discontents. 3.0 Credits.
This course aims to familiarize students with a wide-range of feminist and queer conceptions of love as a political force. While reading theoretical texts and selections of poetry, students will be encouraged to interrogate the political implications of different conceptions of love, eros, and desire.
Instructor(s): K. Glanz
Area: Humanities.

AS.363.395. Poetics and Politics of Sex: Intimacy and Its Discontents. 3.0 Credits.
Where might one turn for intimacy if its available forms are dissatisfying? What happens when politics authorizes certain forms of intimacy but not others? How might intimacies and their discontents lack a language to do them justice? This course explores problems with normative intimacies such as monogamy, family, and intimate publics. It covers issues such as optimism, ambivalence, trauma, queerness, war, and longing. It also explores how authors try to describe intimacy through different genres, such as poems, aphorisms, novellas, essays, and scholarly articles.
Instructor(s): C. Shomura
Area: Humanities
Writing Intensive.

Psychological and Brain Sciences
http://pbs.jhu.edu/

The psychological and brain sciences are concerned with understanding the biological and psychological processes underlying animal and human behavior at all stages of development.

The undergraduate program leading to the baccalaureate degree is intended to provide students with a sound background in psychological and brain sciences and, at the same time, to prepare them for advanced study.

The program for doctoral students in psychological and brain sciences has a strong empirical focus and emphasizes research methodology. The broad aim of the graduate program is to train students to become scientists rather than practitioners.

Facilities
The department’s offices and laboratories contain dozens of desktop computers (PCs and Macintoshes) and UNIX workstations used for experimental control and for computational studies, simulation, data analysis, and manuscript preparation.

The F. M. Kirby Research Center for Functional Brain Imaging houses 3.0T and 7.0T Philips research-directed MRI scanners for fMRI studies of human perception, memory, and cognition.

The cognitive psychology and cognitive neuroscience laboratories contain a wide range of computer equipment and special-purpose research equipment, including image-processing and large-format graphics systems, eye-movement monitors, speech recognition and analysis systems, stereoscopic graphic systems, video equipment, EEG, Transcranial Magnetic Stimulation, and other stimulus-presentation and response-collection devices.

The biopsychology laboratories have all the facilities necessary to conduct modern behavioral neuroscience research, including equipment for behavioral and operant testing, electrophysiology, histology, surgery, neurochemistry, and systems for the analysis and synthesis of audio signals.

Undergraduate Programs
Psychology Degree Objectives
The courses in Psychological and Brain Sciences have four purposes:

1. to acquaint all interested students with a sampling of topics through a variety of introductory and advanced courses;
2. to prepare majors for graduate work in psychology and related disciplines through a program that meets the admission requirements of the outstanding graduate departments in the United States;
3. to offer a distribution of courses for a minor concentration in psychology as well as several fields of concentration for area majors in the social and behavioral sciences; and
4. to provide an honors track designed for exceptional students who want training beyond that provided by the standard undergraduate curriculum.

Psychology Major Requirements
Also see Requirements for a Bachelor’s Degree. (p. 7)

Note: Students who entered JHU prior to Fall 2018 may follow the old requirements as detailed in the catalog based on their year of entry to the institution or may follow these revised requirements.

General Requirement:
All classes taken for the major (including those for NQE credit) must be taken for a grade and be completed with a C- or better.

Specific Requirements:

- **Intro Level Course Requirement:** Three 100-level psychology courses. These are typically taken during Year 1 and Year 2.
- **Experimental Methods, Design & Analysis:** AS.200.200 Research Methods in Experimental Psychology and AS.200.201 Design & Analysis for Experimental Psychology should be taken as a two-course sequence in Fall and Spring of Year 2.
- **Upper Level Course Requirement:** Five upper level psychology courses (200- or 300-level), three of which must be at the 300-level. These are typically dispersed through Years 2-4.
- **Small Group Experience:** 3 credits of either research, internship, independent study or an additional 300-level psychology course with an enrollment cap of 19 students or less. Students who are interested in graduate work in psychology are encouraged to get involved in research/internship activity starting in Year 2 and to continue throughout their time at Hopkins.
- **9 NQE Credits:** Students must complete 9 additional NQE credits using courses not taught within the psychology department (AS.200.XXX) and not counting otherwise toward the psychology major.

Please note that not all courses offered by the Department of Psychological & Brain Sciences (AS.200.XXX) will fulfill the requirements.
of the Psychology major/minor (ex. AS.200.220 Discover Hopkins Health Studies: Application of Abnormal Psychology to Forensic Cases). Consult with Academic Advising and your psychology major advisor to ensure appropriate progress toward degree completion.

### I. Required Courses Outside the Department

Nine credits of additional N, Q, or E courses *

### II. Required Courses Within the Department

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.200.200</td>
<td>Research Methods in Experimental Psychology</td>
<td>4</td>
</tr>
<tr>
<td>AS.200.201</td>
<td>Design &amp; Analysis for Experimental Psychology</td>
<td>4</td>
</tr>
</tbody>
</table>

Select three of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.200.101</td>
<td>Introduction To Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.110</td>
<td>Introduction to Cognitive Psychology or AS.050.100 Cognition</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.132</td>
<td>Introduction to Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.133</td>
<td>Introduction to Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.141</td>
<td>Foundations of Brain, Behavior and Cognition</td>
<td>3</td>
</tr>
</tbody>
</table>

Research, internship, independent study, or a designated seminar course *

Five additional psychology courses distributed as follows: ** 15

- Two additional courses at the 200-400 level
- Three additional courses at the 300-400 level

* The seminar course must have a maximum enrollment of 19 students. Courses used to fulfill the five upper-level course requirements may not be used to satisfy this requirement. Students may take 1-3 credits in any given semester to fulfill this requirement. All students are required to discuss their plans with their faculty advisor before junior clearance.

** One upper level course in Cognitive Science may be used to satisfy these course credits with the approval of the Director of Undergraduate Studies. Research, independent study, and internships may not be used to satisfy these course requirements.

*** Students who are planning advanced study in psychological and brain sciences are strongly encouraged to engage in psychological research and/or clinical internships.

### III. Sample Program

A typical path toward degree completion might include the following sequence of courses (this sample is a suggestion, course requirements should be filled based upon your scheduling and plan of studies, with guidance from your Academic Advisor and/or Major Advisor):

<table>
<thead>
<tr>
<th>Class Year</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Required 100-level Psychology course</td>
<td>3</td>
<td>Two Required 100-level Psychology course</td>
</tr>
<tr>
<td>NQE elective required for major</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AS.200.200 Research Methods in Experimental Psychology</td>
<td>4</td>
<td>AS.200.201 Design Analysis for Experimental Psychology</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>200- through 400-level Psychology course</td>
<td>3</td>
<td>200- through 400-level Psychology course</td>
<td>3</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>300- through 400-level Psychology course</td>
<td>3</td>
<td>300- through 400-level Psychology course</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Small Group Experience or Independent Academic Work</td>
<td>3</td>
<td>NQE elective required for major</td>
<td>3</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>300- or 400-level Psychology course</td>
<td>3</td>
<td>NQE elective required for major</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 44

### Restrictions

No courses taken during Intersession or through the School of Education and the Carey Business School may be counted toward the requirements for the B.A. degree in Psychological and Brain Sciences (although a limited number of such courses may be counted toward the 120 credits required for graduation).

Most courses offered by Psychological & Brain Sciences (AS.200.XXX) through the Summer at Hopkins program will not count toward the Psychology major or minor. However, exceptions may include summer courses that are also offered and counted toward the major/minor during the Fall and Spring semesters. You may make an appointment with Dr. Stephen Drigotas, Director of Undergraduate Advising for Psychological & Brain Sciences, to ensure that your enrollments will be considered toward your academic progress in the manner you intend.

### Preparation for Graduate Work in Psychology

The Department of Psychological and Brain Sciences provides preparation for graduate training in all areas of psychology, including clinical and counseling. Virtually all psychology graduate programs, including those that provide training in clinical or counseling psychology, expect students to have a strong background in scientific psychology, including statistics. The department encourages students to obtain additional practical experiences outside the classroom, including research in a laboratory and/or an internship in a mental health care setting. These additional experiences are particularly salient to graduate school admission committees.

### Honors Program in Psychology

The B.A. degree with honors provides recognition for outstanding achievement in formal course work and research. The requirements for a degree with honors include those for the regular B.A. degree, plus the following:

- A minimum grade point average of 3.5 in psychology courses (exclusive of independent study or research) through the fall semester of the student’s junior year.
• A formal application to be submitted to the Director of Undergraduate Studies by March 31 of the student’s junior year. The application must include a copy of the student’s transcript, a brief description of the proposed honors research project, and written endorsement of the application by the student’s faculty sponsor. The sponsor must have a full-time faculty appointment at Johns Hopkins and either a primary or a joint appointment in the Department of Psychological and Brain Sciences. Admission into the Honors Program is not guaranteed.
• Completion of two 300- or 600-level psychology courses, in addition to those required for the regular B.A. degree. Neither of these can be research or reading courses. These additional courses are not in addition to the 120 credits required for graduation.
• Completion of an independent research project under the supervision of a member of the department’s faculty, culminating in a written honors thesis. The student will enroll in AS.200.519 Seniors Honors Research and AS.200.520 Seniors Honors Research during both semesters of the senior year. The honors thesis must be submitted no later than March 31 of the senior year and must be read and approved in writing by two members of the faculty.
• Students considering application to the honors program should begin discussing possible thesis research topics with a faculty sponsor no later than the fall semester of their junior year.

Minor in Psychology
A minor in psychology is available to undergraduates majoring in any department. Students electing to minor in psychology should declare their intention directly to the Director of Undergraduate Studies in the Department of Psychological and Brain Sciences by the end of junior year. All classes taken for the minor must be taken for a grade and be completed with a C- or better. The minor requires successful completion of the following:

Select three of the following: 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.200.101</td>
<td>Introduction To Psychology</td>
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<td>Introduction to Cognitive Psychology</td>
</tr>
<tr>
<td>or AS.050.101Cognition</td>
<td></td>
</tr>
<tr>
<td>AS.200.132</td>
<td>Introduction to Developmental Psychology</td>
</tr>
<tr>
<td>AS.200.133</td>
<td>Introduction to Social Psychology</td>
</tr>
<tr>
<td>AS.200.141</td>
<td>Foundations of Brain, Behavior and Cognition</td>
</tr>
</tbody>
</table>

One psychology course at any level 3
Two psychology courses at the 300 or 600 level * 6

* No course from the Carey Business School or School of Education may count toward the minor.

Undergraduate Academic Awards
The Department of Psychological and Brain Sciences offers two undergraduate academic awards. The G. Stanley Hall Prize is awarded for outstanding achievement by an undergraduate in psychology. The Julian C. Stanley Award is given to the psychology major who most closely approximates Dr. Stanley’s personal and professional standards of excellence.

Graduate Programs
Master of Arts in Psychology
A student who has been admitted into the Ph.D. program can earn a Master of Arts degree in partial fulfillment of the requirements for the Ph.D. degree. Normally, candidates for the Ph.D. degree in psychology will qualify for the M.A. degree at the end of their second year, after having completed two area seminars and at least two courses in psychological research design and/or advanced statistics, provided that their performance is of the quality judged satisfactory for the M.A. level. There is no terminal master’s program.

Requirements for the Ph.D. Degree
The Department of Psychological and Brain Sciences emphasizes training and experience in the research methods essential to the development of new knowledge in the various sub-fields of psychology. Our core program for doctoral students emphasizes scientific methodology and provides rigorous research training. Each doctoral candidate is expected to become familiar with both a relatively narrowly defined area and a broad spectrum of knowledge related to the student’s topic of specialization.

In addition to general university requirements, the Department of Psychological and Brain Sciences has the following regulations:

Statistics
Most graduate students will complete take AS.200.657 Advanced Statistical Methods during the first semester and AS.200.658 Advanced Research Design and Analysis during the second semester. Students with exceptional statistical training should take two more advanced courses by arrangement with the Director of Graduate Studies.

Fundamentals and Core Topics in PBS
AS.200.613 Fundamentals of Biopsychology, AS.200.617 Fundamentals of Cognitive Psychology, AS.200.654 Psychological & Brain Sciences Core Topics A, and AS.200.655 Psychological & Brain Sciences Core Topics B offer an introduction to the fundamental principles and methods of the psychological & brain sciences. Students will read seminal and contemporary papers in topics that cover the breadth of the field. In addition, students become versed in the careful consideration of data and in formulating written and oral arguments.

First-Year Research Report
During the first year, the student, together with the faculty advisor, identifies a research project that will provide extended research experience. Normally, the student designs a study as part of a larger ongoing project. A project proposal must be submitted by April 15 of the first year; this proposal introduces the nature of the scientific problem, reviews the relevant literature, and describes the proposed study in detail, together with the anticipated data, means of analysis, and interpretations. A final written version of this report must be submitted by December 15 of the student’s second year; ideally, this "first year project" report includes all the information that would be appropriate for submission to a scientific journal.

Advanced Examination
Each student must pass an in depth examination in his/her chosen area. This examination, which includes both a written and oral part, is graded by a committee of at least two faculty members. The written and oral portions of the advanced examination offer the student an opportunity to demonstrate both in-depth, focused knowledge in their specialty area of study, and also a breadth of knowledge outside of their area of expertise. The student must pass the advanced examination by the beginning of the third year of study.

Advanced Study
Each student, in collaboration with a faculty advisor, plans a course of study consisting of intermediate and advanced topical and research seminars.
Topical Seminars
The Department of Psychological and Brain Sciences offers topical seminars in which one or more faculty members leads seminars on topics of special interest, such as memory, cognitive development, neurophysiological aspects of behavior, vision sciences, and decision making. Through participation in these seminars, student are exposed to findings in subfields of psychology. Topics vary from semester to semester and are determined by the interests of both faculty and graduate students.

Research Seminars
Students and faculty engaged or interested in research in particular areas organize these seminars. Participants discuss their own research and other current research in the area.

Teaching Requirement
Graduate students serve as teaching assistants (TAs) to members of the department's faculty. All graduate students are expected to TA a minimum of four semesters. Although there is some flexibility in TA assignments, students typically initiate their TA experience during the first semester of their second year, continuing consecutively through the second semester of the third year. The Department Chair, Director of Graduate Studies, Department Administrator, and Academic Program Coordinator collaborate to assess the instructional support needs of the department and assign these teaching duties. Advanced students may apply for a Dean's Teaching Fellowship. A course is proposed by the student and is sponsored by a faculty member. These are highly competitive and prestigious awards. For details please visit http://krieger.jhu.edu/teachingfellowship/.

Literature Review
Students complete a written literature review in preparation of the completion of their dissertation. The literature review is modeled on articles appearing in professional journals. Typically the review provides a background for the thesis plan, but for some students it may be prepared on a topic other than the one selected for the thesis. The literature review is evaluated by the same committee that will evaluate the thesis plan.

Thesis Plan
At least one calendar year before receiving the Ph.D. degree, each doctoral candidate must develop a plan for the dissertation research and present the plan before a departmental committee. With the committee's approval, the student then prepares a dissertation.

Dissertation
The dissertation represents the student's culminating piece of scholarly work. It establishes the start of a research career and the basis for postgraduate employment. The Graduate Board of the University administers the final oral examination, a defense of the thesis. The doctoral dissertation must be in a form suitable for and worthy of publication.

Financial Aid
Financial support packages are available to all doctoral students, with 9-month stipends that are competitive with those of other universities. Financial support includes tuition remission. Summer research assistantships are available in the department.

For current faculty and contact information go to http://krieger.jhu.edu/publichealth/people/

Faculty
Chair
Peter Holland
Krieger-Eisenhower Professor: mechanisms of behavior, learning, memory, motivation, behavioral ecology

Professors
Susan Courtney-Faruque
Vice Provost for Faculty Affairs & Professor: cognitive neuroscience, functional neuroimaging, working memory, attention

Howard Egeth
perception & cognition, attention & attentional selectivity, memory, eyewitness testimony, psychology & law

Lisa Feigenson
cognitive development, numerical cognition

Michela Gallagher
Krieger-Eisenhower Professor: learning & memory, neurobiology of aging

Justin Halberda
cognitive & developmental psychology, reasoning, language acquisition

Patricia Janak
Bloomberg Distinguished Professor: behavioral & neurobiological mechanisms of associative learning, addiction

Cynthia Moss
auditory information processing, spatial attention & perception, learning & memory, memory & sensorimotor integration

Associate Professor
Jonathan Flombaum
visual perception, attention, cognition

Assistant Professors
Marina Bedny
brain development & plasticity, cognitive neuroscience, concepts

Janice Chen
real-world memory, cognitive neuroscience, temporal structure in cognition

Chaz Firestone
perception, attention, visual cognition, foundations of cognitive science

Jason Fischer
visual scene understanding using fMRI, psychophysics, computational modeling

Christopher Honey
cognitive neuroscience, computational neuroscience, memory in neural circuits

Kishore Kuchibhotla
neural circuits; attention, learning & decision-making; audition; neural circuit dysfunction; computational modeling

Shreesh Mysore
neural circuits for behavior (attention, decision-making, etc), computational neuroscience, comparative approach to the design of neural circuits

**Associate Faculty**

**Richard Allen**
Associate Professor; School of Medicine (Neurology): clinical & medical psychology

**Kirsten (Kisi) Bohn**
Assistant Research Professor: acoustic communication, vocal production, social behavior, neuroethology, evolution of vocal complexity

**Jeff Bowen**
Lecturer: close relationships, social psychology, self-regulation, mental representation, psycholinguistics

**Stephen Drigotas**
Teaching Professor & Undergraduate Advisor: social psychology, interpersonal relationships, friendship networks, intergroup behavior, social dilemmas

**Heather Roberts Fox**
Senior Lecturer: industrial/organizational psychology

**Linda Gorman**
Teaching Professor: neuroscience

**Paul J. Hofer**
Adjunct Associate Professor; U.S. Sentencing Commission (Washington, D.C.): law & psychology

**Chelsea Howe**
Lecturer: forensics, abnormal psychology, dual diagnosis, therapy, assessment

**Ann Jarema**
Junior Lecturer: clinical psychology

**Chris Kraft**
Psychologist & Instructor; School of Medicine (Psychiatry & Behavioral Sciences, Center for Marital & Sexual Health); Senior Lecturer: human sexuality & behaviors

**Meghan McGlaughlin**
Junior Lecturer: clinical psychology

**Rick Ostrander**
Teaching Faculty: clinical & adolescent psychology

**Alison Papadakis**
Associate Teaching Professor: clinical & adolescent psychology, developmental psychopathology of depression in adolescence

**Tyler Rickards**
Teaching Faculty: rehabilitation Neuropsychology, traumatic breaking injury, clinical psychology

**Veit Stuphorn**
Associate Professor; School of Medicine (Neuroscience): neurophysiological studies of decision-making

**Jason Trageser**
Lecturer: neuroscience

**Joint Faculty**

**Marilyn Albert**
Professor & Director (Division of Cognitive Neuroscience; School of Medicine): aging, cognition, memory

**Arnold Bakker**
Assistant Professor (Psychiatry; School of Medicine): psychiatric neuroimaging

**Greg Ball**
Research Professor: biopsychology, behavioral neuroendocrinology, neuroethology

**Charles (Ed) Connor**
Professor & Director (Mind/Brain Institute): neurophysiology of visual perception & object recognition

**Barry Gordon**
Professor (Therapeutic Cognitive Neuroscience, Neurology & Cognitive Science); Director (Cognitive Neurology/Neuropsychology): language disorders, memory disorders, severe organic amnesia, focal amnesia, retrograde amnesia

**Steven Gross**
Associate Professor (Philosophy): philosophy of language, philosophy of mind, metaphysics

**Stewart Hendry**
Professor (Mind/Brain Institute): functional organization of primate visual system, primate functional neuroanatomy

**Alfredo Kirkwood**
Associate Professor (Mind/Brain Institute): mechanisms of cortical modification

**James Knierim**
Associate Professor (Mind/Brain Institute): behavioral neurophysiology of the hippocampal formation

**Barbara Landau**
Dick & Lydia Todd Faculty Development Professor & Chair (Cognitive Science): language acquisition, cognitive development, spatial representation, acquisition of the lexicon

**Hey-Kyoung Lee**
Associate Professor (Mind/Brain Institute): cellular/molecular mechanisms of synaptic plasticity underlying memory formation

**Michael E. McCloskey**
Professor (Cognitive Science): language, vision, memory, cognitive neuropsychology, developmental cognitive deficits

**Guy McKann**
Professor (Mind/Brain Institute): patterns of cognitive decline after coronary artery bypass grafting

**Ernst Niebur**
Associate Professor (Mind/Brain Institute): computational neuroscience

**Brenda C. Rapp**
Professor (Cognitive Science): cognitive neuropsychology, attention, reading & writing

**Peter R. Rapp**
Senior Investigative Chief (National Institute on Aging): Laboratory of Experimental Gerontology

**Professor Emeritus**
Bert F. Green Jr.
psychological measurement, quantitative methods, and computer methods

For current course information and registration go to https://sis.jhu.edu/classes/

**Courses**

**AS.200.101. Introduction To Psychology. 3.0 Credits.**
Do we all see colors the same way? How did so many 'good' people support the Nazi party? Do crossword puzzles really stave off Alzheimer's Disease? This course tries to answer these questions and many others, providing a comprehensive overview of the scientific study of the mind. We'll explore topics such as perception, language, memory, decision-making, creativity, love, sex, art, politics, religion, dreams, drugs, brain damage and mental illness, grappling with deep and long-standing controversies along the way: differences between the sexes, the relationship between mind and brain, causes and consequences of racism, human uniqueness (or not) within the animal kingdom, nature vs. nurture, good and evil, consciousness. Appropriate for anyone wanting to know who and what we are as human beings (or who noticed that psychology is now on the MCAT).
Instructor(s): C. Firestone
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.200.110. Introduction to Cognitive Psychology. 3.0 Credits.**
Introductory survey of current research and theory on topics in cognitive psychology. The course will cover a range of topics in perception, attention, learning, reasoning, and memory, emphasizing relationships among mind, brain, and behavior.
Instructor(s): J. Flombaum
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.200.132. Introduction to Developmental Psychology. 3.0 Credits.**
An introductory survey of human development from the prenatal period through adolescence. The developing child is examined in terms of cognitive, social, emotional, motor, and language development.
Instructor(s): L. Feigenson
Area: Social and Behavioral Sciences.

**AS.200.133. Introduction to Social Psychology. 3.0 Credits.**
An introductory survey of social psychology. Topics include social perception, social cognition, attitudes, prejudice, attraction, social influence, altruism, aggression, and group behavior.
Instructor(s): S. Drigotas
Area: Social and Behavioral Sciences.

**AS.200.141. Foundations of Brain, Behavior and Cognition. 3.0 Credits.**
A survey of neuropsychology relating the organization of behavior to the integrative action of the nervous system. Cross-listed with Behavioral Biology and Neuroscience.
Instructor(s): L. Gorman
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.200.142. Discover Hopkins: Profiling Mentally Ill Mass Murderers. 1.0 Credit.**
Mass Shootings by mentally ill are a scourge upon society. Factors like easy access to guns by dangerous mentally ill, inadequate commitment laws, the inability to predict dangerous behavior, and media frenzy, contribute to an increasing death toll. This course uses case studies to highlight the role played by diagnostic assessment (suicide by cop, psychopathic behavior, PTSD, major mental disorders), inadequate prevention civil and gun policy strategies, and stigmatization of the mentally ill as dangerous. Pre-college students only.
Instructor(s): L. Raifman
Area: Humanities, Social and Behavioral Sciences.

**AS.200.159. Freshmen Seminar: Evolutionary Psychology. 1.0 Credit.**
In this course we discuss evolutionary psychology, which is the idea that the mind can be understood as an adaptation to our ancestral environment by means of natural selection. Freshmen only. Note: This course does not count towards the Psychology major.
Instructor(s): H. Egeth
Area: Natural Sciences, Social and Behavioral Sciences.

**AS.200.161. Illusions, delusions, and other confusions: Why what you think you know about human nature is (largely) wrong. 1.0 Credit.**
This course is suitable for all, but would be especially useful for a student who does not expect to take many (or any) additional psychology or cognitive science courses. We will explore what modern psychology has uncovered about how our intuitions concerning human nature deceive us. Freshmen Only. Note: This course does not count towards the Psychology major.
Instructor(s): H. Egeth
Area: Social and Behavioral Sciences.

**AS.200.162. Childhood Disorders & Treatments. 3.0 Credits.**
This is an online course. The class will meet for ten weeks from May 29 through August 3 and will follow the deadlines for Term I for add/drop/withdraw and grade changes. This course examines the psychological disorders that are usually first diagnosed prior to adulthood. Some of the specific disorders that will be discussed are Attention-Deficit and Disruptive Behavior Disorders, Pervasive Developmental Disorders, Learning Disorders and Intellectual Disability. Students will become familiar with various diagnoses, etiologies, and methods of treatment. Note: This course does not count towards the Psychology major.
Instructor(s): A. Jarema
Area: Social and Behavioral Sciences.
AS.200.163. Gamechangers: Conceptual Breakthroughs in Neuroscience. 3.0 Credits.
Freshman Seminar; This introductory class will highlight some of the key findings in neuroscience over the past century and a half that have revolutionized our understanding of how the brain works. The goal is to convey both the essence of, and the excitement surrounding, neuroscience breakthroughs that caused paradigm-shifts. We will also look at recent neuroscience-related headlines in popular media and unpack them from a scientific perspective. Topics covered will include “Is the brain just one big lump of tissue?”, “Telephones in the brain?”, “The frog with upside-down vision”, “Brains vs. hard-drives”, “Monkey see=monkey do neurons”, Epigenetics, “Changing the brain’s wiring diagram”, “Do ants have GPS?”, The science behind the movie ‘Memento’, “Implanting false memories into brains”, “My brain sees you, but I don’t”, etc. For each big question, we will first examine the thinking that previously existed, and then explore the shift in thinking. Note: This course does not count towards the Psychology major.
Instructor(s): S. Mysore
Area: Natural Sciences
Writing Intensive.

AS.200.200. Research Methods in Experimental Psychology. 4.0 Credits.
The goal of this course is to introduce how psychological scientists develop and test research questions about the mind and behavior. We will explore how empirical investigation differs from other ways of making discoveries and learning about the world, and how psychologists employ various methodologies to tackle their phenomena of interest. We will examine the relationships between research questions and research designs, the benefits and drawbacks of differing measurement and sampling approaches, the ethical implications of various research paradigms, and best practices in communicating research findings clearly and engagingly. You will have the opportunity to engage “hands-on” with the research process through interactive labs and demonstrations. Over the course of the semester, you will develop and receive feedback on a research proposal, which will serve as a foundation for the spring course “Design and Analysis for Experimental Psychology”.
Instructor(s): J. Bowen
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences
Writing Intensive.

AS.200.201. Design & Analysis for Experimental Psychology. 4.0 Credits.
The goal of this course is to expose you to the processes of data collection, analysis, and dissemination in psychology. This course is the follow-up to “Research Methods in Experimental Psychology,” and therefore will draw on the methodological principles and practices covered in the Fall semester. This course will cover a wide array of analytical techniques (i.e., statistics) that you will apply to data collected as part of a semester-long group research project. The course will also include extensive coverage of the R programming language for use in data management, analysis, and visualization. With your group members, you will collect primary research data, carry out appropriate statistical tests, compose individual research manuscripts, and collectively present a poster at an on-campus research symposium. In combination with the Fall course, this class will serve as strong preparation for those considering honors theses, joining research labs at Homewood and/or JHMI, conducting independent research projects, and ultimately pursuing careers/graduate work in experimental psychology.
Prerequisites: AS.200.200
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences
Writing Intensive.

AS.200.202. Forensic Psychology. 3.0 Credits.
The field of forensic psychology is focused on answering legal questions about the causes of human behavior. This survey course will explore the work that forensic psychologists do; their research, assessment, and clinical methods; and how their work influences lawyers, judges, and other legal practitioners. Specific topics will include mental capacity assessment, psychopathy, claims of mental distress, child custody evaluations, juvenile delinquency, forensic treatment, and forensic neuropsychological assessments.
Prerequisites: Students can only receive credit for AS.200.202 or AS.200.325, not both.
Instructor(s): C. Howe
Area: Social and Behavioral Sciences.

AS.200.204. Human Sexuality. 3.0 Credits.
Course focuses on sexual development, sexuality across the lifespan, gender identity, sexual attraction and arousal, sexually transmitted disease, and the history of commercial sex workers and pornography. Please note that the use of electronic devices is not permitted during this class, in order to promote the full interactive potential of this engaging seminar-style offering. Open to Juniors & Seniors within the following majors/minors: Behavioral Biology; Biology; Cognitive Science; Medicine, Science & the Humanities; Molecular & Cellular Bio; Neuroscience; Psychological & Brain Sciences; Public Health; Sociology; Study of Women, Gender, & Sexuality.
Corequisites: Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester.
Instructor(s): C. Kraft
Area: Social and Behavioral Sciences.

AS.200.205. Discover Hopkins: Psychological Profiling. 1.0 Credit.
“Psychological Profiling” focuses on strengths and limitations of psychological methods employed by forensic professionals who assist police in criminal investigations. Clinical cases of serial offenders, spree killers, disgruntled employees, police profiling, and terrorists will be studied. Legal and ethical issues will be explored, especially racial profiling controversies. We anticipate visits to the FBI Behavioral Sciences Unit at Quantico, Virginia; Baltimore County Forensic Crime Lab (with emphasis on crime scene analysis), and the Baltimore Police Profiling Program.
Instructor(s): L. Raifman
Area: Social and Behavioral Sciences.

AS.200.208. Animal Behavior. 3.0 Credits.
Examines basic principles of animal behavior (orientation, migration, communication, reproduction, parent-offspring relations, ontogeny of behavior and social organization). Evolution and adaptive significance of behavior will be emphasized.
Prerequisites: AS.200.141 OR AS.200.152 OR Permission of Instructor.
Instructor(s): K. Bohn
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.209. Personality. 3.0 Credits.
Area: Natural Sciences, Social and Behavioral Sciences.
AS.200.211. Sensation & Perception. 3.0 Credits.
This course surveys how stimuli from the environment are transformed into neural signals, and how the brain processes those signals to interpret the objects and events in the world. A primary focus will be on the visual system, with additional coverage of hearing, touch, taste, and smell.
Instructor(s): J. Fischer
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.212. Abnormal Psychology. 3.0 Credits.
A survey of the major syndromes of psychological disorders. Research and theory about the mechanisms, development, and diagnosis of psychopathology are emphasized.
Instructor(s): A. Papadakis
Area: Social and Behavioral Sciences.

AS.200.220. Discover Hopkins Health Studies: Application of Abnormal Psychology to Forensic Cases. 1.0 Credit.
This introductory course will examine the basic diagnostic psychology principles with special application to forensic psychology. The class will focus on investigating forensic psychology queries including: Does my client have a mental illness? Why did he or she act in such a self-defeating way? Does the law require special disposition? Should my client be punished or rehabilitated? We will explore the reasons behind why a movie star would shoplift or a famous athlete would engage in a series of extra marital relationships; why a policeman would commit a series of bank robberies in broad daylight; or why someone would shoot a Congresswoman and kill and wound many others in the process. As part of this course, students will visit with doctors and lawyers (including Judges), view and analyze video and movies about forensic cases, and participate in mock trial exercises. Note: This course does not count towards the Psychology major.
Instructor(s): K. Hill; L. Raifman; L. Williams
Area: Social and Behavioral Sciences.

AS.200.222. Positive Psychology. 3.0 Credits.
The course will review the growing field of positive psychology and will review the research on positive human attributes such as optimism, happiness, hope, resiliency, self-esteem, altruism, empathy, and forgiveness. This course will explore the research on how such positive attributes are developed and how they relate to psychological and physical well-being.
Instructor(s): J. Halberda
Area: Social and Behavioral Sciences.

AS.200.228. The Illusion of Perception. 3.0 Credits.
In this course, students will gain a comprehensive understanding of the ways we perceive (or fail to perceive) things in the real world by studying examples in perception, memory and awareness. Students will read both empirical and theoretical writing on these topics and participate in class discussions exploring their potential ramifications. If the world isn't what we perceive, what are the implications for our society, or for ourselves? Recommended Course Background: AS.050.101 OR AS.200.101 OR AS.200.110
Instructor(s): M. Schurgin
Area: Social and Behavioral Sciences.

AS.200.301. History Of Psychology. 3.0 Credits.
A survey of leading figures, schools, and systems in the history of psychology. The course will emphasize the development of experimental psychology in late 19th century Germany and its establishment in America at Johns Hopkins, Harvard, Chicago, and Columbia. Special topics will include the development of clinical and applied psychology and psychological testing. Enrollment limited to Juniors and Seniors only. Sophomores with instructor approval. Recommended Course Background: two prior Psychology courses.
Instructor(s): P. Hofer
Area: Humanities, Social and Behavioral Sciences.

AS.200.302. Behavioral Assessment of Animal Models of Cognition and Neuropsychiatric Disorders. 3.0 Credits.
What does a rat exploring its environment tell us about memory? How can a mouse help us better understand schizophrenia? This course will focus on procedures that are routinely used to study behavior in animal models of cognition and neuropsychiatric disorders. The procedures discussed will include assessments that fall into 3 broad functional domains: motor function, affective or emotional states, and cognition. Throughout the course, we will read and discuss original research articles to illustrate and compare some of the measures and results from the various procedures. Postdoc Teaching Fellowship. This is designed to be an upper level course.
Prerequisites: Pre-reqs: AS.200.141 OR ( AS.080.305 AND AS.080.306 ) or permission of the instructor.
Instructor(s): D. Smith
Area: Social and Behavioral Sciences.

AS.200.304. Neuroscience of Decision Making. 3.0 Credits.
This course will survey the neural mechanisms of decision-making. Current experimental research and theory concerning selection, control, and evaluation of actions are examined in humans and animals. Topics will range from simple perceptual judgements to complex social behavior. The course involves a weekly lecture about a specific topic followed by a student presentation of a current research paper. Cross-listed with Neuroscience.
Prerequisites: AS.080.305 OR AS.200.141
Instructor(s): V. Stuphorn
Area: Natural Sciences.

AS.200.305. Advanced Seminar in Forensic Psychology. 3.0 Credits.
Forensic psychologists determine clinical diagnoses and offer expert opinions to assist court decision makers who must employ legal tests to make case determinations. This course will explore how forensic psychologists communicate with the courts via consultation, report writing, and expert testimony. Students will write forensic analyses on a variety of controversial, cutting edge forensic topics (e.g., for competence to stand trial, child abuse, civil commitment, compensation for mental injuries, sex offender commitment, insanity, fitness for duty, child custody).
Prerequisites: AS.200.202 AND AS.200.212
Instructor(s): C. Howe
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

AS.200.306. Psychology in the Workplace. 3.0 Credits.
What variables determine whether a person will be happy and productive in an organization? How do you select the employee that is the right fit for a job? Industrial-organizational (I-O) psychology is the study of behavior in the workplace. Topics include job analysis, selection, performance, motivation, satisfaction, leadership and work-life balance.
Instructor(s): H. Roberts Fox
Area: Social and Behavioral Sciences.
AS.200.307. Medical Psychology. 3.0 Credits.
Medical Psychology is a specialization within clinical psychology that focuses on the application of psychological theories, research, and techniques to physical health problems and health promotion. Students will learn about the consultation process and interventions used in medical psychology practice to improve the physical and psychological health of medical patients, including those with chronic conditions (e.g., chronic pain, heart disease) and those with acute illnesses and injuries. Enrollment limited to Junior & Senior Psychology Majors or with instructor approval.
Prerequisites: AS.200.212
Instructor(s): R. Ostrander
Area: Social and Behavioral Sciences.

AS.200.309. Evolutionary Mechanisms of Human Behavior. 3.0 Credits.
This course examines the evolution of human adaptive behaviors. In particular, it examines evolutionary contributions to behaviors concerned with problems of survival such as mating strategies, parenting, and group living. Recommended Course Background: AS.200.101
Instructor(s): H. Petri
Area: Social and Behavioral Sciences.

AS.200.311. Sensory Representations in the Brain: Maps, Modules, & Distributed Coding. 3.0 Credits.
In this course, we will explore the ways in which information from vision, hearing, touch, smell, and taste is encoded in the brain. We will compare and contrast different representation schemes and their computational advantages in order to uncover some overarching organizing principles of sensory processing in the brain. Class meetings will consist of lectures plus group discussions of classic papers in cognitive neuroscience, computational modeling, and neurophysiology. Enrollment limited to Juniors & Seniors.
Prerequisites: AS.200.211 OR AS.080.203 OR AS.050.203 OR AS.200.141 OR AS.020.312
Instructor(s): J. Fischer
Area: Social and Behavioral Sciences.

AS.200.312. Models of Mind and Brain. 3.0 Credits.
This is a seminar surveying computational approaches to understanding mental and neural processes, including sensory and conceptual representation, categorization, learning and memory. The course will also develop familiarity with computational tools such as numerical simulation, linear transformation and data visualization. Enrollment limited to Juniors and Seniors. Recommended Course Background: AS.110.106 / Calculus I OR AS.110.108 Calculus I, AS.050.101 / Cognition OR AS.200.211 / Sensation & Perception OR AS.080.105 / Introduction to Neuroscience OR other introductory coursework in cognitive & neural sciences.
Instructor(s): C. Honey
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.200.316. Thought and Perception. 3.0 Credits.
This year’s topic: Philosophical, Foundational, and Methodological Issues Connected to Bayesian Approaches in Cognitive Science. Bayesian probability theory and Bayesian decision theory aim to lay out how ideal reasoners update their beliefs in the light of new evidence and make decisions based on those beliefs. But what about such apparently non-ideal agents such as ourselves? The past few decades have witnessed a rising tide of Bayesian work on perception, higher cognition, neural coding, etc. It’s been accompanied by vigorous debate concerning the aims and claims of these approaches. Some see the prospect of a grand unified theory of the mind/brain; others demur. We’ll examine these debates and what one can learn from them regarding more generally about approaches to modeling the mind and the nature of rationality. Readings will be drawn both from the empirical and the philosophical literature. (This course meets jointly with AS.200.616 & AS.150.476)
Instructor(s): C. Firestone; S. Gross
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.200.317. Interpersonal Relations. 3.0 Credits.
This course will investigate interpersonal processes ranging from attraction and courtship to relationship functioning and distress. Enrollment limited to Psychology majors, Psychology minors, and Behavioral Biology majors.
Prerequisites: AS.200.133
Instructor(s): S. Drigotas
Area: Social and Behavioral Sciences.

AS.200.320. The Interface of Psychology & Semantics: Procedural Matters. 3.0 Credits.
Often, languages are described as sets of expressions. But in acquiring a language, a child acquires a procedure that generates expressions. If linguistic expressions pair pronunciations with mental representations, then one task shared by linguists and psychology is to specify the forms of these representations. This seminar explores this relationship in detail.
Instructor(s): J. Halberda
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.321. Child and Adolescent Psychology. 3.0 Credits.
This course focuses on mental disorders in children and adolescents. The course begins with an examination of the general models and theories for why psychopathology occurs in childhood. The second portion of the course provides a systematic review of the symptoms, course, risk factors, theories, and treatments for specific disorders, including mood disorders, anxiety disorders, autism, ADHD, eating disorders, and behavioral disorders.
Prerequisites: AS.200.212
Instructor(s): A. Papadakis
Area: Social and Behavioral Sciences.

AS.200.322. Clinical Neuropsychology. 3.0 Credits.
Clinical Neuropsychology is a clinical psychology specialty focused on assessment and treatment of acquired or developmental disorders of the nervous system, including dementia, neurodegenerative disorders, traumatic brain injury, learning disabilities, and neurodevelopment disorders. This course will focus on research findings and techniques used by psychologists in the assessment, treatment, and rehabilitation processes. Recommended Course Background: AS.200.141 / Foundations of Brain Behavior Cognition.
Prerequisites: AS.200.212
Instructor(s): T. Rickards
Area: Social and Behavioral Sciences.
AS.200.323. Psychology and Social Media. 3.0 Credits.
This course explores modern-day social media use (e.g., Facebook, Match.com) through multiple theoretical lenses within psychology. Through weekly student-led discussions and readings, it will accomplish 3 aims: 1) applying psychology of identity, motivation, and communication to social media (e.g., self-presentation, intergroup dynamics), 2) investigating clinical/health implications of social media use (e.g., addiction, loneliness), and 3) exploring social media as data-gathering environments (e.g., user experience research from already committed guest-speakers who work in social media industries).
Instructor(s): J. Bowen
Area: Social and Behavioral Sciences.

AS.200.324. Choosing the ‘champion’ animal in neuroscience research. 3.0 Credits.
This course will explore one of the most important breakthroughs in the field of neuroscience and reveal the sometimes underestimated animals who have been at the core of these discoveries. Understanding how diverse animal models can serve to answer different questions in neuroscience is key for the advancement of the field. Choosing the “champion animal” is a phrase often used in neuroethology to describe the idea of finding the best model to investigate the scientific question at hand. Invertebrates have been at the core of neuroscience research for the better part of the last century. Since the discovery of the squid giant axon and subsequent description of axon function and action potentials, invertebrates have been pioneering at every corner of neurobiological research. To mention some, the first description of central pattern generators was discovered in the isolated nervous system of the locust, the first described molecular underpinnings of learning and memory were described in the sea slug Aplysia californica and the foundation of the field of connectomics started with the complete wiring diagram of the nervous system of Caenorhabditis elegans. Nowadays, invertebrates remain key models to study the brain; Drosophila flies and new techniques in genetics have given way to important discoveries of brain development and neuronal and gene function that have helped us understand further how these mechanisms work in other species, including humans. Enrollment limited to Majors/Minors in Biology, Behavioral Biology, Cognitive Science, Medicine science & the Humanities, Molecular & Cellular Biology, Neuroscience, Biophysics, Natural Sciences, Psychology. Recommended Course Background: AS.080.305 Nervous System I & AS.080.306 Nervous System II.
Prerequisites: AS.200.141 OR AS.080.305
Instructor(s): A. Salles
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.326. Law, Psychology and Public Policy. 3.0 Credits.
An introduction to applications of psychological research in policy analysis. Special emphasis is given to the use and misuse of psychology in Supreme Court advocacy and decision making in the areas of children’s rights, adult sexuality, and educational and employment opportunity. Recommended Course Background: Statistics & Regression Analysis
Instructor(s): P. Hofer
Area: Social and Behavioral Sciences
Writing Intensive.

AS.200.329. Real World Human Data: Analysis & Visualization. 3.0 Credits.
Experiments in human cognition typically involve careful manipulation and control of variables in order to answer specific questions about the mind or brain. However, digital devices now provide an ocean of incidental human data: information collected continuously about our behavior and physiological states as we go about our lives. These incidental datasets are often large and noisy, and pose different analysis and visualization challenges from more traditional manipulated experiments. In this course students will learn computational tools and qualitative approaches for exploring, visualizing and interpreting large human data. The course emphasizes computer-based analysis of open-source human behavioral and neuroimaging datasets. Analyses will be conducted in MATLAB. Instructor will grant approval as long as you have previous programming experience (roughly equivalent to material covered in an introductory-level programming course). Self-taught or real-world experience can be applicable in lieu of previous formal classroom instruction.
Instructor(s): J. Chen
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.200.333. Advanced Social Psychology. 3.0 Credits.
The class is designed as a seminar including discussion of primary readings of social psychology articles ranging in topics from interpersonal relationship to behavior in large groups. Rising junior & senior Psychology majors only.
Prerequisites: AS.200.133
Instructor(s): S. Drigotas
Area: Social and Behavioral Sciences.

AS.200.336. Foundations of Mind. 4.0 Credits.
An interdisciplinary investigation into the innateness of concepts: perception, number, language, and morality, physics discussed. Evidence from animals, infants, patients, brains. Students collect data in sections investigating claims from the readings. Cross-listed with Cognitive Science and Philosophy.
Instructor(s): J. Halberda; L. Feigenson
Area: Social and Behavioral Sciences.

AS.200.339. Cognitive Development. 3.0 Credits.
How do children acquire knowledge about the world? In this course, we will explore how children understand the world, looking at concepts of objects, number, space, and other people. Students will read both empirical and theoretical writing on these topics, participate in class discussions, and complete short critical writing assignments and final literature review paper.
Instructor(s): M. Kibbe
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.344. Behavioral Endocrinology. 3.0 Credits.
An examination of the effects of hormones on behavior in non-human and human animals. Topics will include the effects of hormones on sexual differentiation, reproductive behavior, parental behavior, homeostasis and biological rhythms, regulation of body weight, learning and memory. Cross-listed with Behavioral Biology and Neuroscience.
Prerequisites: Prereq: ( AS.200.141 OR AS.080.306 ) OR (AS.020.151 AND AS.020.152) OR ( AS.020.305 AND AS.020.306 ) or instructor’s permission
Instructor(s): K. Bohn
Area: Natural Sciences, Social and Behavioral Sciences.
AS.200.361. Tests & Measurements. 3.0 Credits.
Psychological tests and measures are used in several settings including research, clinical, business, forensic, school and other applied settings. This course will consider the methodological and practical issues involved in test construction, the evaluation of instruments, and the uses of psychological tests across settings and for different purposes. Examples of assessments that may be discussed are aptitude and achievement tests; personality and behavioral inventories; neuropsychological tests, observations and interviews; and tests for employment and forensic use. Enrollment limited to Junior & Senior Cognitive Science & Psychology Majors, or instructor approval.
Instructor(s): H. Roberts Fox
Area: Social and Behavioral Sciences.

AS.200.368. Sleep, Dreams, and Altered States of Consciousness. 3.0 Credits.
Sleep, dreaming, resting and arousal to waking represent very different states of consciousness which differ dramatically both psychologically and physiologically. This course focuses on cognitive, psychological, physiological, biological and genetic aspects characterizing each of these states with some reference to other altered states. The course includes a focus on the major pathologies affecting sleep-wake states. Clinical cases will be considered. These inform about both psychological and biological aspects of these states. The relative biological functions of each state will be evaluated with particular attention to the mystery of why we have and apparently need REM and NREM sleep. Actual physiological recordings of sleep states will be reviewed and the student will learn how these are obtained and how to evaluate these. The circadian rhythms, ontogeny and evolution of these sleep-wake states will also be covered. This will include a review of information learned from non-human animal sleep. The change from sleep to full awakening reflects change toward increasing brain organization supporting consciousness. Understanding of the neurobiology of these states will be used to explore some of the more modern and scientific concepts of human self-awareness or consciousness. Recommended Course Background: AS.200.101 OR AS.080.203 OR AS.050.203
Instructor(s): R. Allen
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.369. Neuroscience of Motivation & Reward. 3.0 Credits.
This course will explore the neurobiological bases of motivated behavior, including eating, drinking, and reproduction, tracing the history of our understanding from early preclinical studies to the modern day, with a focus on mammalian model systems. We will discuss innate motivated behaviors, and well as how learning can guide the expression of these behaviors. Neural mediation of processes such as reward and aversion will be considered in depth, as will applications of these findings to the understanding of addiction and other behavioral disorders. The course will be a mixed lecture/seminar format; we will read original research articles and scholarly reviews.
Prerequisites: AS.080.306 (students may enroll concurrently); AS.080.305; Students may not have taken AS.200.366.
Instructor(s): P. Janak
Area: Natural Sciences.

AS.200.372. The Aging Brain. 3.0 Credits.
We will examine what current research can tell us about changes in mental abilities as we grow older, what biological changes in the brain during aging cause cognitive decline, and finally, how scientists are meeting the challenge of maintaining the functions of the mind into advanced old age.
Instructor(s): M. Gallagher
Area: Natural Sciences, Social and Behavioral Sciences Writing Intensive.

AS.200.376. Psychopharmacology. 3.0 Credits.
Designed to provide information about how drugs affect the brain and behavior. The course focuses on biological concepts underlying structures and functions of the brain that relate to mental disorders. An introduction to neurobiology and brain function is presented as it applies to the interaction of various classes of drugs with the individual neurotransmitter systems in the brain. A brief historic review is followed by a discussion of clinical relevance. Cross-listed with Behavioral Biology and Neuroscience. Enrollment limited to juniors and seniors.
Prerequisites: AS.200.141 OR AS.020.306 OR AS.080.305 or Instructor Permission
Instructor(s): H. Adwanikar; S. Sterbing-d'angelo
Area: Natural Sciences, Social and Behavioral Sciences.

AS.200.377. Neuroethology. 3.0 Credits.
A comparative and evolutionary approach to understanding the neural underpinnings of biologically relevant behaviors in vertebrate and invertebrate animals. Enrollment limited to Sophomores, Juniors, Seniors or by instructor approval. Recommended Course Background: AS.200.141
Instructor(s): C. Moss
Area: Natural Sciences.

AS.200.379. Research Seminar in Clinical Psychology. 3.0 Credits.
A small group exploration of current issues in clinical psychology, aimed at developing students' empirical research skills. Following critical analysis of the empirical literature, students develop research proposals for novel research and/or conduct research and author research reports. Topics vary by semester. In the current offering, the topic will be stress, coping, emotion-regulation, peer relationships, and psychopathology among adolescents and emerging adults. Recommended Course Background: AS.200.212 Abnormal Psychology AND EN.553.111 Statistical Analysis I AND EN.553.112 Statistical Analysis II AND AS.200.207 Research Methods in Experimental Psychology. Enrollment limited to Junior & Senior Psychology majors & minors by instructor approval.
Prerequisites: AS.200.212
Instructor(s): A. Papadakis
Area: Social and Behavioral Sciences Writing Intensive.

AS.200.380. Neurobiology of Human Cognition. 3.0 Credits.
The complexity of human behavior surpasses even our closest primate relatives. Only humans communicate through language, build complex technology, devise legal system and wage war. What neurobiological capacities set humans apart from other animals? This course will explore the neurobiology of cognition, focusing on cognitive domains that are particularly developed in the human species: language, social cognition, number, executive function and concepts. The course format will consist of lectures and in class workshops.
Prerequisites: AS.200.141 OR AS.200.312 OR AS.080.105 OR AS.080.203 OR AS.050.203 OR AS.050.312
Instructor(s): M. Bedny
Area: Natural Sciences, Social and Behavioral Sciences.
AS.200.382. Models of Psychotherapy. 3.0 Credits.
This course reviews the major models of psychotherapy, including psychodynamic, cognitive, behavioral, interpersonal, and family therapy, with a focus on modern and empirically supported treatments. The application of the models through the analysis of clinical case studies is emphasized. Restricted to Junior & Senior Psychology Majors.
Prerequisites: AS.200.212
Instructor(s): A. Papadakis
Area: Social and Behavioral Sciences
Writing Intensive.

AS.200.384. Spatial Orientation and Navigation: Behavior and Neural Mechanisms. 3.0 Credits.
A cross-disciplinary investigation of space representation and navigation in a broad range of animal species. Topics will include sonar orientation, landmark use, the role of dead reckoning, spatial memory, long-distance migration, and map-making.
Prerequisites: AS.200.141 OR (AS.080.305 AND AS.080.306) or equivalent.
Instructor(s): C. Moss
Area: Natural Sciences.

AS.200.386. Animal Cognition. 3.0 Credits.
Examine relations between brain, mind, and behavior in nonhuman animals, focusing on topics such as learning, memory, attention, decision-making, navigation, communication, and awareness. We will take a variety of approaches, including behavioral, computational, evolutionary, neurobiological, and psychological perspectives.
Prerequisites: AS.200.141 OR AS.200.208 OR AS.290.101 or Instructor permission.
Instructor(s): P. Holland
Area: Social and Behavioral Sciences.

AS.200.388. Occupational Health Psychology. 3.0 Credits.
Occupational Health Psychology (OHP) concerns the application of psychology to improving the quality of work life, and to protecting and promoting the safety, satisfaction, health, and well-being of workers. This course will consider a broad range of topics in OHP including the role of work on well-being, job stress and burnout, diversity and work, safety climate, work-family balance, conflict, and counterproductive work behaviors. The emphasis will be on drawing connections between OHP theory and OHP practice and at the relationship between individual and organizational health and well-being. This class should be of interest to students interested in industrial/organizational psychology, social psychology, health psychology, clinical psychology, human factors, public health, preventive medicine, and industrial engineering.
Instructor(s): H. Roberts Fox
Area: Social and Behavioral Sciences.

AS.200.509. Internship-Psychology. 1.0 Credit.
S/U grading only.
Instructor(s): Staff.

AS.200.510. Psychology Internship. 0.0 - 3.0 Credits.
Grading Satisfactory/ Unsatisfactory only.
Instructor(s): Staff.

AS.200.511. Psychological Research - Juniors. 3.0 Credits.
S/U grading only.
Instructor(s): Staff.

AS.200.512. Psychology Research-Juniors. 0.0 - 4.0 Credits.
Grading Satisfactory/ Unsatisfactory only.
Instructor(s): Staff.

AS.200.513. Psychological Research - Seniors. 3.0 Credits.
The student chooses some research problem with the advice and approval of a faculty member. S/U grading only.
Instructor(s): Staff.

AS.200.514. Psychology Research-Seniors. 0.0 - 4.0 Credits.
Instructor(s): Staff.

AS.200.519. Seniors Honors Research. 3.0 Credits.
Seniors working on the honors thesis enroll with the approval of the undergraduate coordinator.
Instructor(s): Staff.

AS.200.520. Seniors Honors Research. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.200.540. Independent Study-Seniors. 3.0 Credits.
Instructor(s): Staff.

AS.200.541. Independent Study - Juniors. 3.0 Credits.
Instructor(s): Staff.

AS.200.542. Independent Study - Sophomores. 3.0 Credits.
Instructor(s): Staff.

AS.200.595. Internship. 1.0 Credit.
Instructor(s): Staff.

AS.200.597. Psychology Research. 3.0 Credits.
Instructor(s): Staff.

AS.200.599. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): Staff.

This is a required course for all first year PhD students in the Department of Psychological and Brain Sciences. The course covers foundational concepts and methods in neurobiology and cognitive neuroscience.
Instructor(s): P. Holland, P. Janak
Area: Natural Sciences, Social and Behavioral Sciences.

Graduate students only or permission required.
Instructor(s): B. Anderson, K. Blacker.

Graduate student only.
Instructor(s): K. Blacker.
AS.200.616. Thought and Perception.
This year’s topic: Philosophical, Foundational, and Methodological Issues Connected to Bayesian Approaches in Cognitive Science. Bayesian probability theory and Bayesian decision theory aim to lay out how ideal reasoners update their beliefs in the light of new evidence and make decisions based on those beliefs. But what about such apparently non-ideal agents such as ourselves? The past few decades have witnessed a rising tide of Bayesian work on perception, higher cognition, neural coding, etc. It’s been accompanied by vigorous debate concerning the aims and claims of these approaches. Some see the prospect of a grand unified theory of the mind/brain; others demur. We’ll examine these debates and what one can learn from them regarding more generally about approaches to modeling the mind and the nature of rationality. Readings will be drawn both from the empirical and the philosophical literature. (This course meets jointly with AS.200.316 & AS.150.476)
Instructor(s): C. Firestone; S. Gross
Writing Intensive.

This is a required course for all first year PhD students in the Department of Psychological and Brain Sciences. The course covers foundational concepts and methods in cognition.
Instructor(s): J. Flombaum.

Often, languages are described as sets of expressions. But in acquiring a language, a child acquires a procedure that generates expressions. If linguistic expressions pair pronunciations with mental representations, then one task shared by linguists and psychology is to specify the forms of these representations. This seminar explores this relationship in detail.
Instructor(s): J. Halberda.

This course will provide an overview of clinical, neuropsychological, imaging and neuropathological approaches to the study of cognitive systems altered in aging, AD and other neurodegenerative disorders. It will consider research using animal models as well as human subjects and clinical populations. The course is intended for graduate students and is open to advanced undergraduates only with permission of the professor. Predoctoral and Postdoctoral students from A&S, SPH and SOM students participating in the NIA Training Program on Age-Related, Cognitive and Neuropsychiatric Disorders are required to take this course; meets concurrently with PH.330.802(01).
Instructor(s): M. Albert; M. Gallagher.

AS.200.649. Aging, Cognition, and Neurodegenerative Disorders II.
Second part of a two-semester course. Course will provide an overview of clinical, neuropsychological, imaging and neuropathological approaches to the study of cognitive systems altered in aging, AD and other neurodegenerative disorders. It will consider research using animal models as well as human subjects and clinical populations. The course is intended for graduate students and is open to advanced undergraduates only with permission of the professor. Predoctoral and Postdoctoral students from A&S, SPH and SOM students participating in the NIA Training Program on Age-Related, Cognitive and Neuropsychiatric Disorders are required to take this course; meets concurrently with PH.330.802(01)
Instructor(s): M. Albert; M. Gallagher.

AS.200.654. Psychological & Brain Sciences Core Topics A.
This course is designed to introduce students to core topics in psychological and brain sciences. Students will read seminal and contemporary papers in topics that cover the breadth of the field. Graduate students in Psychological and Brain Sciences.
Instructor(s): L. Feigenson.

AS.200.655. Psychological & Brain Sciences Core Topics B.
This course is designed to introduce students to core topics in psychological and brain sciences. Students will read seminal and contemporary papers in topics that cover the breadth of the field. Graduate Students in Psychological & Brain Sciences.
Instructor(s): L. Feigenson.

Topics in applied probability and statistical inference; analysis of variance; experimental design. Intended for graduate students. Recommended Course Background: one statistics course.
Prerequisites: Statistics Sequence restriction: students who have completed any of these courses may not register: EN.550.211 OR EN.550.230 OR AS.280.345 OR EN.550.310 OR EN.550.311 OR EN.560.435 OR EN.550.420 OR EN.550.430 OR EN.560.348
Instructor(s): J. Bowen
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

Second half of graduate statistics sequence, covering complex research design and analysis. Recommended Course Background: AS.200.657. Enrollment limited to seniors by instructor approval and graduate students.
Area: Quantitative and Mathematical Sciences.

Focus on frequently-used quantitative methods used in the study of brain sciences, including gaining conceptual understanding of techniques, analysis and summarization of data, extracting the process underlying a data set, explaining data as a function of variables, data visualization, etc. Enrollment is limited to undergraduate seniors and graduate students with instructor approval. Recommended Course Background: Probability & Statistics, Linear Algebra, MATLAB programming.
Area: Quantitative and Mathematical Sciences.

AS.200.661. Topics in Psychological & Brain Sciences.
An introduction to postdoctoral activities (e.g., grant applications, journal article submission, meeting presentations, the politics of psychology and American science) for Ph.D. candidates in psychology.
Instructor(s): L. Feigenson.

AS.200.662. Psychological and Brain Sciences: Career Development.
Instructor(s): L. Feigenson.

This seminar will cover advanced topics in vision from the perspectives of several disciplines. Topics include human visual psychophysics, perception and cognition, and computational vision. Graduate students only.
Instructor(s): H. Egeth; J. Flombaum; J. Halberda.

Instructor(s): L. Feigenson.
A cross-disciplinary investigation of space representation and navigation in a broad range of animal species. Topics will include sonar orientation, landmark use, the role of dead reckoning, spatial memory, long-distance migration, and map-making. Contact instructor for enrollment approval.
Instructor(s): C. Moss.

This seminar will cover advanced topics in neurocognitive aging. Topics will include animal models of memory loss in normal aging and in Alzheimer’s disease (AD), including both behavioral and neurobiological findings. Special attention will be given to the relation between such findings and the effects of aging and AD on memory and the brain in man. Similar comparative analysis in other cognitive domains (e.g. attentional processes) will also be considered.
Instructor(s): M. Gallagher.

Instructor(s): J. Flombaum.

Guided independent readings. The class is designed as a seminar including discussion of primary research articles of cognitive aging. Specific topics include human imaging and animal models of memory, aging, and neurodegenerative disease.
Instructor(s): R. Haberman.

AS.200.810. Research in Psychology.
Students plan and execute original research under guidance of advisers. Results are usually prepared in a form suitable for publication. Graduate students only.
Instructor(s): L. Feigenson.

Instructor(s): H. Egeth.

Instructor(s): L. Feigenson.

Instructor(s): J. Halberda.

Instructor(s): P. Holland.

Instructor(s): L. Feigenson.

Instructor(s): V. Stuphorn.

Instructor(s): J. Halberda.

Guided independent readings and research in special fields. Graduate Students only.
Instructor(s): L. Feigenson.

Graduate students only.
Instructor(s): F. Madison, G. Ball.

Research seminar covering topics on human memory and perception in real-world settings.
Instructor(s): J. Chen.
Cross Listed Courses

Cognitive Science

AS.050.102. Language and Mind. 3.0 Credits.
Introductory course dealing with theory, methods, and current research topics in the study of language as a component of the mind. What it is to "know" a language: components of linguistic knowledge (phonetics, phonology, morphology, syntax, semantics) and the course of language acquisition. How linguistic knowledge is put to use: language and the brain and linguistic processing in various domains. Cross-listed with Neuroscience and Psychology.
Instructor(s): C. Wilson
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.312. Cognitive Neuroimaging Methods in High-Level Vision. 3.0 Credits.
This course is an advanced seminar and research practicum course. It will provide the opportunity to learn about fMRI methods used in the field of vision science and for students to have hands-on experience to develop, design and analyze research study on topics in the cognitive neuroscience field of high-level vision. In the first part of the course students will read recent fMRI journal papers and learn about common fMRI designs and analysis methods; in the second part of the course students will conduct a research study as a group to address a research question developed from readings. Students are expected to write a paper in a journal article format at the end of the course and to present their results in front of the class. Research topics will vary but with special focus on topics in object, scene and space recognition. Cross-listed with Neuroscience and Psychology. Instructor's permission required.
Instructor(s): S. Park
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.339. Cognitive Development. 3.0 Credits.
This is a survey course in developmental psychology designed for individuals with some basic background in psychology or cognitive science, but little or none in development. The course is strongly theoretically oriented, with emphasis on issues of nature, and development psychology as well as relevant empirical evidence. The principle focus will be early development, i.e., from conception through middle childhood. The course is organized topically, covering biological and prenatal development, perceptual and cognitive development, the nature and development of intelligence, and language learning.
Instructor(s): J. Yarmolinskaya
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.358. Language & Thought. 3.0 Credits.
Have you ever wondered about the relationships between language and thought? Philosophers, linguists, psychologists, evolutionary theorists and cognitive scientists have too and this course will survey the current thinking on this matter. Classical papers such as those by Whorf and Sapir, more recent philosophical papers by people such as Fodor and Dennett, and recent empirical work by linguists and psycholinguists on the relationship between language and thinking in development and in adults will be covered. Discussions will focus on the theoretically possible relationships between language and thought and the empirical data that speak to these. Juniors and seniors only. Freshmen and sophomores by permission of instructor only.
Instructor(s): B. Landau
Area: Humanities, Natural Sciences, Social and Behavioral Sciences.

AS.050.375. Probabilistic Models of the Visual Cortex. 3.0 Credits.
The course gives an introduction to computational models of the mammalian visual cortex. It covers topics in low-, mid-, and high-level vision. It briefly discusses the relevant evidence from anatomy, electrophysiology, imaging (e.g., fMRI), and psychophysics. It concentrates on mathematical modelling of these phenomena taking into account recent progress in probabilistic models of computer vision and developments in machine learning, such as deep networks.
Prerequisites: AS.110.106 OR AS.110.108
Instructor(s): A. Yuille
Area: Quantitative and Mathematical Sciences.

AS.050.612. Cognitive Neuroimaging Methods in High-Level Vision. Instructor's permission required. (Also offered as AS.050.312.)
Instructor(s): S. Park
Area: Natural Sciences, Social and Behavioral Sciences.

AS.050.675. Probabilistic Models of the Visual Cortex. The course gives an introduction to computational models of the mammalian visual cortex. It covers topics in low-, mid-, and high-level vision. It briefly discusses the relevant evidence from anatomy, electrophysiology, imaging (e.g., fMRI), and psychophysics. It concentrates on mathematical modelling of these phenomena taking into account recent progress in probabilistic models of computer vision and developments in machine learning, such as deep networks. Also offered as AS.050.375. Co-listed with Computer Science as EN.601.485.
Instructor(s): A. Yuille.

Neuroscience

AS.080.304. Neuroscience Learning and Memory. 3.0 Credits.
This course is an advanced survey of the scientific study of learning and memory. Different perspectives will be used to review the science of learning and memory including the cellular-molecular basis of synaptic plasticity, the functional circuitry involved in learning and memory systems in the brain. The course is designed to provide a deep understanding of the issues and current debates in learning and memory research and focuses specifically on animal models of memory and memory impairment. This is an interactive lecture course with a strong emphasis on student participation.
Prerequisites: AS.200.141[C] OR (AS.080.305[C] AND AS.080.306[C]) OR (AS.020.312[C] AND AS.020.306[C]) or instructor permission.
Instructor(s): A. Bakker
Area: Natural Sciences.

AS.080.330. Brain Injury & Recovery. 3.0 Credits.
This course investigates numerous types of brain injuries and explores the responses of the nervous system to these injuries. The course's primary focus is the cellular and molecular mechanisms of brain injury and the recovery of function. Discussions of traumatic brain injury, stroke, spinal cord, and tumors, using historical and recent journal articles, will facilitate students' understanding of the current state of the brain injury field. Cross-listed with Psychological and Brain Sciences and Behavioral Biology.
Prerequisites: (AS.080.305 AND AS.080.306) OR (AS.020.312 OR AS.020.306) OR (200.141 and 020.306) OR Permission of Instructor
Instructor(s): L. Gorman
Area: Natural Sciences
Writing Intensive.
**Public Health Studies**

**AS.080.348. Science of Learning. 3.0 Credits.**
Can what we know about the brain guide how we learn or teach in our schools? This seminar course is designed to address this question. In this course we will focus on the science of what we know about learning and teaching (and not the politics) to see if we can actually use the research to "optimize learning in society". As we read the literature, we will look at some of the "neuromyths" that have been propagated thus far and discuss how to avoid creating new neuromyths by effectively communicating the research.

**Prerequisites:** Pre-reqs: AS.080.306 OR AS.200.141
Instructor(s): L. Gorman
Area: Natural Sciences, Social and Behavioral Sciences
Writing Intensive.

**Behavioral Biology**
**AS.290.420. Human Sexual Orientation. 3.0 Credits.**
This course will examine the historical and current theories of sexual orientation and sexual variation development by examining the biological, psychological and social contributing factors that influence the development of sexual orientations and variations along with treatment and modification of problematic sexual behaviors. Please note that the use of electronic devices is not permitted during this class, in order to promote the full interactive potential of this engaging seminar-style offering. Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester. Enrollment is limited to Senior Majors & Minors in Behavioral Biology, Biology, Cognitive Science, Medicine, Science & the Humanities; Molecular & Cellular Bio; Neuroscience; Psychology; Public Health; Sociology; Study of Women, Gender, & Sexuality.

**Corequisites:** Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester.
Instructor(s): C. Kraft
Area: Social and Behavioral Sciences.

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**Public Health Studies**

http://krieger.jhu.edu/publichealth/

Public Health combines a prevention orientation with a population perspective in pursuit of better health for all members of society. Public health professionals deal with critical large-scale issues such as access to health care; chronic disease control; mapping, predicting, and containing outbreaks of infectious disease; as well as researching factors that contribute to health outcomes such as gender, poverty, and education. Public Health has close ties with medicine through research, clinical practice, and formulating policy.

The Public Health Studies Program offers undergraduates a major that links them to the world of public health through core courses taken on the Homewood campus, as well as electives taken at the Johns Hopkins Bloomberg School of Public Health (JHSPH).

Core coursework at Homewood includes Introduction to Public Health, Research Methods for Writing in Public Health, Fundamentals of Epidemiology, Environment and Your Health, Fundamentals of Health Policy and Management, Biostatistics, and a course in Social and Behavioral Health. Students also take coursework in Social Sciences, Biology and Calculus. Students will select additional public health coursework from a range of options that include the global health, demography, health economics, medical sociology, history, and politics. The major is flexible and easily adapted to further course work in the natural sciences and historically. About two-thirds of Public Health Studies majors complete the premedical core curriculum.

Public Health Studies majors also complete the Public Health Applied Experience as part of their undergraduate degree requirements. This involves a supervised, hands-on experience working with public health professionals. The goal of the applied experience requirement is to ensure that students have practical public health exposure in a research or community setting. Find more information at http://krieger.jhu.edu/publichealth/applied-experience/

The Johns Hopkins Bloomberg School of Public Health is the oldest and largest school of public health in the United States. Although its primary function is as a graduate school, seniors majoring in public health studies take a semester's worth of courses there in fulfilling their B.A. degree requirements. Many students get involved in ongoing research projects at JHSPH.

Available coursework at JHSPH includes the following areas: health education, environmental health sciences, epidemiology, health finance and management, health policy, human genetics, immunology and infectious diseases, international health, maternal and child health, mental health, nutrition, occupational medicine/health protection and practice, population studies, toxicology, and tropical medicine, among others.

An honors option is available to Public Health Studies seniors with a major GPA of 3.5. Public Health Honors students complete an independent research project under the supervision of a JHU faculty member and with the guidance of the Honors seminar instructor. Students register for 280.495 Honors in Public Health Seminar in the fall and 280.499 in the spring. Interested students should discuss their plans with their PHS advisor no later than the spring of their junior year.

Many Public Health Studies students have pursued international public health internships and study abroad opportunities both during the academic year and over the summer. In addition to a wide array of general options available through the JHU Office of Study Abroad, the PHS program has established two public-health specific annual programs: Intersession (3 weeks) in Uganda and Summer (7 weeks) in South Africa. Each includes both academic and applied components and allows students to earn graded JHU credits which can be used toward the Public Health Studies major. The Uganda program compares health issues in urban and rural settings, while the South Africa program closely investigates the impact of the HIV epidemic on prevention measures and healthcare delivery in that country. For more information, go to krieger.jhu.edu/publichealth/academics/study-abroad/.

The Public Health Studies office is located in the 3505 North Charles Building, adjacent to the Homewood campus. Public Health Studies advisors may be consulted about the various courses, careers, and graduate programs in public health on a walk-in basis or by appointment. Information can also be obtained by emailing phstudies@jhu.edu or at http://krieger.jhu.edu/publichealth.

**Bachelor of Arts/Masters Program**

The Bachelor of Arts/Master of Health Sciences (BA/MHS) and Bachelor of Arts/Master of Sciences in Public Health (BA/MS) programs are a coordinated academic collaboration between the Krieger School of Arts and Sciences and the Johns Hopkins Bloomberg School of Public Health. It enables talented and committed Public Health Studies Program majors to complete a BA and master's degree from the School of Public Health in five to six years.
The Department of Environmental Health Sciences, Department of Epidemiology, Department of Mental Health and Department of International Health will consider JHU undergraduates majoring in Public Health Studies for admission to the BA/MHS program. The Department of Environmental Health Sciences also offers a BA/MSPH in Occupational and Environmental Hygiene. The Department of Health Policy and Management offers a BA/MSPH in Health Policy.

Public Health Studies students apply for early admission during their junior year. Admitted students must complete the BA degree before formally enrolling in the graduate school, but up to 16 of the public health credits earned inter-divisionally toward the BA may also apply toward the MHS or MSPH degree. In addition, students in this program will receive co-advising from both schools to optimize their academic experience. Find more information at http://krieger.jhu.edu/publichealthacademics/.

Public Health Studies Program Advisory Board
The Public Health Studies Program Advisory Board reviews the progress and status of the Public Health Studies Program. Members provide advice and guidance on issues that are vital to a successful program, such as faculty appointments, curriculum reviews, utilization of university resources, and new funding opportunities.

One designated Public Health Studies Alumni serves a 2-year term on the committee.

Board Members
Krieger School of Arts and Sciences
Joel Schildbach; Vice Dean for Undergraduate Education; Professor (Biology)
Andy Cherlin; Professor (Sociology); Benjamin H. Griswold III Professor of Public Policy
Adam Sheingate; Associate Professor (Political Science); Advisory Board Chair

Johns Hopkins Bloomberg School of Public Health
Marie Diener-West; Abbey-Merrell Professor of Biostatistics; Chair, Master of Public Health Program
John Groopman; Anna M. Baetjer Professor in Environmental Health and Engineering
Colleen Barry; Fred and Julie Soper Professor in Health Policy and Management
Laura Morlock; Executive Vice Dean for Academic Affairs and Professor in Health Policy and Management
James Yager; Professor (Environmental Health and Engineering)
Scott Zeger; Professor (Biostatistics); Professor (Epidemiology)

Requirements for the B.A. Degree
Also see Requirements for a Bachelor’s Degree (p. 7).

All major requirements must be taken for a letter grade. Course taken satisfactory/unsatisfactory do not apply towards the major with some exceptions for the applied experience requirement. Major requirements are as follows:

Courses at Homewood

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.106 (or AS.110.108)</td>
<td>4</td>
</tr>
<tr>
<td>AS.280.101</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.240</td>
<td>4</td>
</tr>
</tbody>
</table>

...and the remaining courses in biology and one corresponding lab:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.280.335 The Environment and Your Health</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.340 Fundamentals of Health Policy &amp; Management</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.345 Public Health Biostatistics</td>
<td>4</td>
</tr>
<tr>
<td>AS.280.350 Fundamentals of Epidemiology</td>
<td>4</td>
</tr>
</tbody>
</table>

Select two introductory social science courses from Table 1. Students matriculating Fall 2017 or later must take these from two different departments.

Select one course to satisfy the core competency in the social and behavioral aspects of public health:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.230.341 Sociology of Health and Illness</td>
<td>3</td>
</tr>
<tr>
<td>or AS.280.360 Clinical &amp; Public Health Behavior Change</td>
<td></td>
</tr>
</tbody>
</table>

Three public health courses at the 200-400 level offered on the Homewood campus

Ten credits of courses at the Bloomberg School of Public Health

Applied clinical or community-based experience

Requirements at JHSPH
Fifteen (15) units of courses are taken at the Johns Hopkins Bloomberg School of Public Health in the student’s fourth year. This is equivalent to 10 Homewood credits. Within the 15, students must create an 8 unit focus in one particular area, topic, or department. Other courses may be taken in any department. These courses may not be independent research/special study, taken S/U or online.

Applied Experience
Public health studies majors will complete one (1) approved supervised, hands-on experience working with public health professionals. A minimum of 80 hours of applied work is required along with written academic work including a synthesizing assignment. Additional information about this requirement is available here (http://krieger.jhu.edu/publichealth/applied-experience)

Sample Program
A typical program might include the following sequence of courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.280.101 Introduction to Public Health</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.151 General Biology I</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.153 General Biology Laboratory I</td>
<td>1</td>
</tr>
</tbody>
</table>

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.280.101 Introduction to Public Health</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.151 General Biology I</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.153 General Biology Laboratory I</td>
<td>1</td>
</tr>
</tbody>
</table>

...and corresponding labs.
<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits Fall</th>
<th>Credits Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sophomore Fall</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Research Methods and Scientific Writing for Public Health</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>The Environment and Your Health</td>
<td>3</td>
<td>Fundamentals of Epidemiology</td>
</tr>
<tr>
<td>Public Health Biostatistics</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Fall</th>
<th>Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidemiology, if not taken Sophomore year OR Applied Experience</td>
<td>0-3 Applied Experience, if not done in Fall OR Inquiry and Communication if not taken Sophomore Year</td>
<td>0-3</td>
</tr>
<tr>
<td>Upper Level Public Health Elective (200-400 level)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Upper Level Public Health Elective (200-400 level)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>6-9</td>
<td>3-6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Fall</th>
<th>Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomberg School of Public Health Courses (Honors)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>7-9</td>
<td>7-9</td>
<td></td>
</tr>
</tbody>
</table>

| Total Credits | 71-81 |

### Table 1
Approved Introductory Level Social Science Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.060.155</td>
<td>Expository Writing: Introduction to the Research Paper - Controversies in Adolescence</td>
<td>3</td>
</tr>
<tr>
<td>AS.070.132</td>
<td>Invitation to Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>AS.140.105</td>
<td>History of Medicine</td>
<td>3</td>
</tr>
<tr>
<td>AS.140.106</td>
<td>History of Modern Medicine</td>
<td>3</td>
</tr>
<tr>
<td>AS.140.146</td>
<td>History of Public Health in East Asia</td>
<td>3</td>
</tr>
<tr>
<td>AS.150.219</td>
<td>Introduction to Bioethics</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.101</td>
<td>Elements of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.102</td>
<td>Elements of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AS.190.220</td>
<td>Global Security Politics</td>
<td>3</td>
</tr>
<tr>
<td>AS.190.284</td>
<td>Classics of Political Theory: Political Freedom</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.101</td>
<td>Introduction To Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.110</td>
<td>Introduction to Cognitive Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.132</td>
<td>Introduction to Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.133</td>
<td>Introduction to Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.209</td>
<td>Personality</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.212</td>
<td>Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.200.222</td>
<td>Positive Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AS.230.101</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>AS.230.150</td>
<td>Issues in International Development</td>
<td>3</td>
</tr>
<tr>
<td>AS.271.107</td>
<td>Introduction to Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>AS.360.247</td>
<td>Introduction to Social Policy: Baltimore and Beyond</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.108</td>
<td>Introduction Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.110</td>
<td>Introduction to Engineering for Sustainable Development</td>
<td>3</td>
</tr>
</tbody>
</table>

### Honors in Public Health Studies
An honors option is available to Public Health Studies seniors with a major GPA of 3.5. Public Health Honors students complete an independent research project under the supervision of a JHU faculty member and the guidance of the Honors seminar instructor. Students register for AS.280.495 Honors in Public Health - Seminar in the fall and AS.280.499 Honors in Public Health in the spring. Interested students should discuss their plans with their PHS advisor no later than the spring of their junior year. Students may not count the honors courses towards any other requirement of the major; they are in addition to major requirements.

For current faculty and contact information go to http://krieger.jhu.edu/publichealth/directory/

### Faculty
**Program Director**
Maria Bulzacchelli
PhD, Assistant Research Professor; Director, Undergraduate Program in Public Health Studies

**Assistant Director**
Lisa Folda
M.H.S.; Lecturer (Public Health Studies); Academic Advisor.

**Academic Advisor**
Katherine Henry
PhD; Academic Advisor (Public Health Studies).

**Faculty**
Stanley Becker
Professor (Population, Family, and Reproductive Health).

Peter Beilenson
Associate (Public Health Studies).

David Bishai
Professor (Population, Family, and Reproductive Health).

Lee Bone
Associate Professor (Health, Behavior, and Society).

Joseph Bressler
Professor (Environmental Health and Engineering)
Amelia Buttress
Assistant Scientist (Health, Behavior and Society)
Lawrence Cheskin
Associate Professor (Health, Behavior, and Society).
Ann Herbert
School of Public Health Post-Doctoral Student (Health, Behavior and Society)
Leah Jager
Assistant Scientist (Biostatistics).
Megan Latshaw
Assistant Scientist (Environmental Health and Engineering)
Philip Leaf
Professor (Mental Health).
Catherine Maulsby
Associate Scientist (Health, Behavior and Society)
Heather McKay
Research Associate (Epidemiology)
Michael Schneider
Research Associate (Epidemiology)
Margaret Taub
Assistant Scientist (Biostatistics).
Roland Thorpe
Associate Professor (Health, Behavior and Society)
Jon Vernick
Professor (Health Policy and Management)
Peter Winch
Professor (International Health).
Barry Zirkin
Professor (Biochemistry and Molecular Biology).

For current course information and registration go to https://sis.jhu.edu/classes/

### Courses

**AS.280.101. Introduction to Public Health. 3.0 Credits.**
This course provides an overview of the field of public health. Topics include the major causes of morbidity and mortality; the socioeconomic, behavioral, and environmental factors that affect health; the analytical methods used in the field; the role of government in protecting the public’s health; key features of the U.S. health care system; and current challenges in the field. The course also introduces students to the basic conceptual models and approaches that are central to public health practice. This course is restricted to rising Sophomores who are declared Public Health Studies majors, and incoming Freshman only. Your enrollment may be withdrawn at the discretion of the instructor if you don’t meet one of those criteria.
Instructor(s): M. Bulzacchelli
Area: Social and Behavioral Sciences.

**AS.280.120. Lectures on Public Health and Wellbeing in Baltimore. 1.0 Credit.**
An introduction to Urban Health with Baltimore as a case study: wellbeing, nutrition, education, violence and city-wide geographic variation. Lectures by JH Faculty, local government/service providers and advocates.
Instructor(s): P. Leaf
Area: Social and Behavioral Sciences.

**AS.280.161. Applications of Biological Concepts in Public Health. 3.0 Credits.**
This course explores the basic biology concepts relevant to public health. Case studies will be used to examine key scientific principles and their application. This course is designed for public health students who are not intending to pursue a career in natural sciences or medicine. This course satisfies the Public Health Studies Biology requirement, but does not satisfy Pre-Med requirement. All freshman must have taken or be currently enrolled in AS.280.101 to register. Department Approval Required.
Prerequisites: AS.020.151
Instructor(s): K. Henry
Area: Natural Sciences.

**AS.280.203. Introduction to International Nutrition. 1.0 Credit.**
The course presents a broad overview of international public health nutrition, including: main nutritional problems in developing countries, causes and consequences of malnutrition, and multi-level approaches for the prevention and treatment of malnutrition. Grades will be based on class attendance, participation, and a presentation that describes the key nutrition indicators for a low-income country of the student's choice, and proposes an intervention to address the country's nutrition challenges.
Instructor(s): J. Emerson.

**AS.280.220. Baltimore and The Wire: A focus on major urban issues. 3.0 Credits.**
Playing off the themes raised in the HBO series "The Wire", this course will provide an introduction to major issues confronting Baltimore and other American urban centers through a series of lectures by policy makers in the region.
Instructor(s): P. Beilenson
Area: Social and Behavioral Sciences.

**AS.280.224. Health, Homelessness & Social Justice. 3.0 Credits.**
Homelessness is bad for one's health, and its existence, persistence, and growth demonstrate deep policy failures and social ills. This course examines issues fundamental to the modern phenomena of homelessness in the U.S. – and the connection between disparate health and desperate inequality. There are ethical values and dimensions to the decisions we make about health policy – and public policy generally. Life, liberty, the pursuit of happiness, equality, justice, community, democracy, human rights, and human flourishing; there are many values that we might prioritize – both individually and collectively – as we develop and assess programs, policies, and systems. In this course, we will consider these and other values together with issues of health and homelessness. We will also examine tools of policy analysis and political action, and how those committed to changing the world can use those tools to engage that system critically.
Instructor(s): A. Schneider
Area: Social and Behavioral Sciences.
AS.280.225. Population, Health and Development. 3.0 Credits.
This course will cover the major world population changes in the past
century as well as the contemporary situation and projections for this
century. Topics include rapid population growth, the historical and
continuing decline of death and birth rates, contraceptive methods as
well as family planning and child survival programs, population aging,
urbanization, population and the environment and the demographic
effects of HIV/AIDS. This course is restricted to Public Health Studies
majors. Students minoring in Study of Women, Gender, and Sexuality can
register with instructor approval.
Prerequisites: Students who have taken AS.230.225 may not take
AS.280.225.
Instructor(s): S. Becker
Area: Social and Behavioral Sciences.

AS.280.226. Mini-Term: Urban Environments and Public Health. 3.0
Credits.
Introduction to physical and social environmental systems issues
affecting the health of several marginalized populations (eg. immigrants,
impoverished and homeless). The course will primarily use Baltimore
as the field for experiential learning, and will incorporate cross-cultural
discussions, a variety of readings, and guest lecturers from Hopkins
faculty and industry experts. Course will meet for two weeks: from July
7th through 18th.
Instructor(s): A. Rule
Area: Social and Behavioral Sciences.

AS.280.232. Applications of Precision Medicine in Public Health. 1.0
Credits.
This course will (1) introduce students to principles of precision
medicine (PM) across the care continuum and (2) engage students
to think critically about how PM will change the medical and public
health landscape. Students will learn about the PM initiative and
current examples of PM in disease prevention, diagnosis, treatment
and surveillance. Students will identify challenges associated with
incorporating PM into our health care system and discuss strategies to
mitigate such challenges.
Instructor(s): M. Roberts.

4.0 Credits.
This course examines the research process, with an emphasis on
formulating research questions, critically evaluating published research,
and drawing objective conclusions from a body of scientific literature.
Students conduct a systematic review of the scientific literature related
to a public health issue. Labs focus on developing and documenting
a sound review methodology and communicating the review findings
effectively in writing.
Prerequisites: AS.280.101
Instructor(s): R. Thorpe
Area: Social and Behavioral Sciences
Writing Intensive.

AS.280.302. GIS as a Public Health Tool. 3.0 Credits.
This course provides an introduction to Geographic Information Systems
(GIS) and presents its utility in the various fields of public health such
as Epidemiology, Environmental Health and International Health.
Provides exposure to GIS as a tool for describing the magnitude of health
problems and for supporting health decision making. Course topics
include a historical overview of the intersection between geography and
public health; current epidemiological use of GIS; and, GIS applications
in identifying public health problems such as the current Ebola outbreak.
This course is ideal for students who desire exposure to the vast utility of
GIS as it applies to public health.
Instructor(s): J. Ferguson
Area: Quantitative and Mathematical Sciences, Social and Behavioral
Sciences.

AS.280.303. Responding to Disasters: From Earthquakes to Ebola. 3.0
Credits.
Responding to Disasters: from Earthquakes to Ebola introduces students
to the fundamentals of humanitarian and disaster response. The course
is divided into four topic areas: (1) fundamentals of humanitarian
emergencies, (2) methods in humanitarian emergency settings, (3)
refugee health, and (4) emerging issues in humanitarian response.
Instructor(s): J. Freeman
Area: Social and Behavioral Sciences.

3.0 Credits.
This writing intensive course will encourage students to consider what
counts as evidence among public health professionals as well as popular
audiences. Using case studies from the field of epidemiology, now
emblematic of the field, students will learn about historical changes in
theories of population health and disease. Through a series of writing
assignments, students will interrogate the formal structure of scientific
arguments and gain practice in synthesizing and communicating
complex ideas to a lay audience. Juniors/Seniors Only
Prerequisites: Prerequisite/Corequisite: AS.280.350
Instructor(s): A. Buttress
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.280.320. Seminar on Public Health and Well-being in Baltimore. 3.0
Credits.
Seminar combines lectures from AS.280.120 with additional readings
and discussion to more deeply address urban health issues. The course
will revolve around student projects that can impact health and wellbeing
in Baltimore. If you are accepted for this course do NOT register for
AS.280.120. Course registration is by instructor permission only. You will
be asked to provide a brief description of a project in order to determine
your potential linkage with this course. This course is utilizing the online
active approval process. Permission requests should be submitted
via SIS Self-Service upon the opening of your registration period. The
instructor will review requests and approve registrations using SIS
Self-Service for Faculty. Please note, a request does not guarantee
registration into the course. Status inquiries should be address to the
instructor or departmental administrator.
Instructor(s): P. Leaf
Area: Social and Behavioral Sciences.
AS.280.323. Public Health Policy and Politics. 3.0 Credits.
This course will introduce students to the major concepts of the American political process (local, state and federal), and to the use of different aspects of the political realm to achieve policy change in the public health/health care arena. As part of the course we will illustrate the decision making process of making policy change through political action with real world examples (mostly from Baltimore and Maryland), examine policy and politics of the U.S. health care system, and participate in the political process through a mock legislative hearing. You cannot register for this course if you have taken AS.280.103.
Prerequisites: Students may not enroll if you have taken AS.280.103.
Instructor(s): P. Beilenson
Area: Social and Behavioral Sciences.

AS.280.325. Public Health in South Africa. 3.0 Credits.
This course provides an in-depth overview of Public Health in South Africa, including material on the political climate, health care services, and the impact of the HIV/AIDS epidemic. Course is taught in Cape Town, South Africa.
Instructor(s): M. Smart
Area: Social and Behavioral Sciences.

AS.280.326. Community-Based Learning in South Africa. 3.0 Credits.
3 Credit course taught in Cape Town, South Africa. This course may be used to satisfy the Public Health Applied Experience requirement. Students will participate in a community-based service learning program with a local NGO in Cape Town.
Instructor(s): M. Smart
Area: Social and Behavioral Sciences.

AS.280.329. The Good, the Bad, and the Ugly: Scientific Writing in Public Health. 3.0 Credits.
This course covers how to conduct a literature review, and interpret and evaluate scientific literature that focuses on public health. In addition, this course will provide students with fundamental skills of writing a scientific manuscript. Skills obtained in this course will prepare students for advanced-level senior year classes at Bloomberg and other graduate institutions.
Prerequisites: AS.280.350, AS.280.345
Instructor(s): R. Thorpe
Area: Social and Behavioral Sciences
Writing Intensive.

AS.280.335. The Environment and Your Health. 3.0 Credits.
This course surveys the basic concepts underlying environmental health sciences (toxicology, exposure assessment, risk assessment), current public health issues (hazardous waste, water- and food-borne diseases), and emerging global health threats (global warming, built environment, ozone depletion, sustainability). Public Health Studies, Global Environmental Change and Stability, and Earth and Planetary Science majors have 1st priority for enrollment. Your enrollment may be withdrawn at the discretion of the instructor if you are not a GECS, PHS, or EPS major.
Instructor(s): J. Bressler; J. Yager; M. Latshaw
Area: Natural Sciences.

AS.280.340. Fundamentals of Health Policy & Management. 3.0 Credits.
Through lectures and small group discussions, students will develop a framework for analyzing health care policy problems and gain familiarity with current issues including managed care, Medicare and the uninsured. Public Health Studies majors have 1st priority for enrollment. Your enrollment may be withdrawn at the discretion of the PHS program if you are not a PHS major.
Instructor(s): J. Vernick
Area: Social and Behavioral Sciences.

AS.280.345. Public Health Biostatistics. 4.0 Credits.
Using problem-based learning focusing on public health topics, students learn to describe & summarize data, make inferences regarding population parameters, & test hypotheses. Recommended Course Background: Four years of high school math.
Prerequisites: Statistics Sequence restriction: students who have completed any of these courses may not register: EN.550.211 OR EN.550.230 OR AS.280.314 OR AS.280.315 OR EN.550.310 OR EN.550.311 OR EN.560.435 OR EN.550.420 OR EN.550.430 OR EN.560.348
Instructor(s): L. Jager; M. Taub
Area: Quantitative and Mathematical Sciences.

AS.280.346. Advanced Biostatistics Laboratory. 1.0 Credit.
As a complementary course to 280.345, Public Health Biostatistics, this course teaches R programming skills necessary for conducting independent data analyses, beyond those presented in the main course. No programming experience is necessary, but a willingness to learn independently and work with other students is indispensable.
Prerequisites: AS.280.345
Instructor(s): L. Jager; M. Taub
Area: Quantitative and Mathematical Sciences.

AS.280.347. Health Data Analysis Practicum. 2.0 Credits.
Students will learn to formulate precise scientific and policy questions, design exploratory and confirmatory statistical analyses to address the questions, conduct appropriate analyses using the statistical package R, and communicate their findings through graphical and tabular displays that are presented in writing and in person. The course will be run in a seminar style in which students conduct data analysis to present to one another in one meeting per week. Evaluation will be through class participation and a final project in which students will analyze their own data set to address a question of their choice. Students need to have taken an introductory statistics course at the level of AS.280.345 (Public Health Biostatistics) and must have some experience using the statistical software R to perform basic analyses.
Instructor(s): L. Jager; M. Taub
Area: Quantitative and Mathematical Sciences.

AS.280.350. Fundamentals of Epidemiology. 4.0 Credits.
A practical introduction to epidemiology focusing on the principles and methods of examining the distribution and determinants of disease morbidity and mortality in human populations. This course is restricted to Public Health Studies rising seniors and rising juniors.
Instructor(s): H. Mckay; M. Schneider
Area: Quantitative and Mathematical Sciences.

AS.280.360. Clinical & Public Health Behavior Change. 3.0 Credits.
This course explores the theory and practice of changing the health behaviors of individuals, and the public health and medical impact of doing so. Theoretical concepts are integrated with practical clinical applications, especially in the areas of diet and fitness. Skill building in persuasive, health-related communication will be included in smaller group discussions.
Instructor(s): L. Cheskin
Area: Social and Behavioral Sciences.
AS.280.380. Global Health Principles and Practices. 3.0 Credits.
Global health addresses the staggering global disparities in health status, drawing on epidemiology, demography, anthropology, economics, international relations and other disciplines. We review patterns of mortality, morbidity and disability in low and middle income countries, starting with malnutrition, infectious diseases and reproductive health, and continuing to an emerging agenda including mental health, injury prevention, surgical care, chronic diseases, and health impacts of climate change. Gender, health systems and health workforce challenges, and career trajectories in global health are also discussed. Recommended course background: Minimum of one prior course in Public Health.
Instructor(s): P. Winch
Area: Social and Behavioral Sciences.

AS.280.399. Community Based Learning - Practicum Community Health Care. 3.0 Credits.
This course is designed to expose students to urban health with focus on Baltimore City through lectures, class discussions, and experiential learning. Students will select a community-based organization (CBO) according to their expressed interests and schedule in order to complete 45 hours of service based learning. Grades are based on participation, completion of service learning project, presentation, and papers. Open to Junior Public Health Studies majors only. Others by permission of instructor.
Instructor(s): J. Goodyear; L. Bone
Area: Social and Behavioral Sciences.

How does U.S. military policy impact global and national public health? Do U.S. military missions promoted as humanitarian assistance, such as those in Africa and Afghanistan, compromise global development and independent humanitarian action programs? Did the CIA's covert use of a vaccination program in Pakistan as cover for intelligence gathering threaten the success of global immunization campaigns? How have vaccines and drugs developed for U.S. military use benefited global public health? These topics and much more will be the focus in this seminar that explores consequences within conflict zones and the developing world, and among military personnel and veterans. Gordis Teaching Fellowship course. Juniors and Seniors Public Health Studies majors only.
Instructor(s): R. Nevin
Area: Social and Behavioral Sciences.

AS.280.407. Public Health and Disasters. 3.0 Credits.
This course will introduce students to the public health component of preparedness and response to common emergencies, including the public health implications of such situations and the role of public health agencies and practitioners. The course will employ an all-hazard perspective, including emerging infections, natural disasters, and terrorism. Students will understand the public health community's role in preparing for and responding to disasters through case studies, discussion, debate, and material related to the national public health preparedness infrastructure. Juniors and seniors Public Health Studies majors only. Gordis Teaching Fellowship course. Recommended Course Background: AS.280.335
Instructor(s): N. Errett
Area: Social and Behavioral Sciences.

AS.280.409. Health Systems Challenges from Chronic Diseases in Low and Middle Income Countries. 3.0 Credits.
This course provides a multidimensional health systems approach to chronic diseases, presently the largest population health burden in low and middle income countries. Learning tools include patient interviews, in-class debates, and country case studies. Recommended course background: AS.280.350: Fundamentals of Epidemiology. Gordis Teaching Fellowship course open to junior and seniors only.
Instructor(s): M. Socal
Area: Social and Behavioral Sciences.

AS.280.411. "Where You Live Matters": The Role of "Place" in Racial/Ethnic Health Disparities. 3.0 Credits.
This course will critically examine the impact of place of residence on health outcomes, and on racial/ethnic health disparities. This will be accomplished by examining different definitions and levels of "place", and assessing the impact of each on various health outcomes and racial/ethnic health disparities. The role of "place" will be examined in the development of interventions targeting racial/ethnic health disparities. Juniors and seniors Public Health Studies majors only. Gordis Teaching Fellowship course.
Instructor(s): C. Bell
Area: Social and Behavioral Sciences.

AS.280.413. Information Communication Technology (e/mHealth) for Health Systems Strengthening. 3.0 Credits.
This course explores the emerging landscape of information and communication technology in public health, such as e/mHealth, through concepts and frameworks of health systems research with a focus on low and middle income countries (LMICs). It is designed to comprehensively address various aspects of e/mHealth including policy aspects of health systems governance, community aspects of health service delivery, economic aspects of the healthcare market, technological aspects of health information infrastructure, and individual aspects of self-monitoring/management. Multidisciplinary approaches will be encouraged to understand complex public health challenges and to suggest creative yet feasible solutions in low resource settings. Successful e/mHealth use cases across countries with various health system contexts will be introduced and discussed. The course is intended for undergraduate students interested in how information and communication technology is likely to affect health care in the future. Gordis Teaching Fellowship course open to Junior and Senior Public Health Majors only.
Instructor(s): Y. Jo
Area: Social and Behavioral Sciences.
AS.280.414. Leading Health Care Organizations. 3.0 Credits.
This seminar course is designed for students who seek an understanding of how to manage health care organizations including management processes, organizational structures, types of governance models and management issues of health care delivery systems. This course is designed to provide participants with an understanding of leadership and organizational behavior within health care organizations (HCOs). In this course, students will become skilled at identifying the forces that challenge the effective management of HCOs at multiple levels – individual, group and organization. Moreover, they will become skilled at developing and analyzing efforts to improve HCOs’ performance. Through case studies, readings, in-class exercises and class discussions, participants will learn analytic frameworks, concepts, tools and skills necessary for leading and management organizational learning, innovation and overall performance improvement in health care organizations. Gordis Teaching Fellowship course open to junior and seniors only.
Instructor(s): K. Henderson
Area: Social and Behavioral Sciences.

AS.280.415. Comparative Health Systems and Health Reform. 3.0 Credits.
The course explores the structural components of modern health care systems through a comparative approach. Students will develop a toolkit for analyzing how the financing, payment, and organization of health service provision determine system performance. Student teams will analyze a health system component and develop health reform recommendations for advancing the often-competing goals of improved population health, financial protection, and public satisfaction. They will also learn how to enhance the political feasibility of technically rigorous reforms through rational design and political stakeholder analysis. Theoretical frameworks utilized by international aid organizations and think tanks will be supplemented by case studies, hands-on class activities, and team projects to encourage active student learning. Gordis Teaching Fellowship course open to Junior and Senior Public Health Majors only.
Instructor(s): N. Done
Area: Social and Behavioral Sciences.

AS.280.416. Nutrition and Immunology in Chronic Disease. 3.0 Credits.
This course provides an overview of basic immunology and nutrition through the review of published chronic disease research. By careful reading and critique of published literature, students will learn to interpret scientific studies on nutrition and chronic disease. This course will cover a variety of globally important chronic diseases such as type II diabetes, heart disease and cancer. Course sessions will include lectures on the basics of nutrition and immunology, seminar sessions to critically evaluate published research findings and group presentations. Recommended prerequisite: Introductory Biology. Gordis Teaching Fellowship course open to junior and seniors only.
Instructor(s): J. Fontes
Area: Natural Sciences.

AS.280.417. Mental Health in Humanitarian Emergencies. 3.0 Credits.
This course will serve as an introduction to mental health in humanitarian emergencies. The course focuses both on mental health disorders (PTSD, anxiety, depression and substance abuse) and well-being (functionality, self-esteem, hope, and pro-social behavior). Assessment of mental health in humanitarian emergencies will include identification of risk factors and protective factors that impact mental health disorders and promote well-being. Coursework will include exploration of ways gender, age, political climate, environmental factors, and social and cultural norms impact mental health. Furthermore, the course will consider development of mental health interventions for specific cultural contexts and evaluation of the effectiveness of interventions in meeting mental health needs in the short and long-term. Class sessions will be built around case studies from various countries and include contexts of natural disasters, armed conflict and complex emergencies. Gordis Teaching Fellowship course open to junior and seniors only.
Instructor(s): M. Cherewick
Area: Social and Behavioral Sciences.

AS.280.418. Introduction to Public Health Genomics. 3.0 Credits.
Advances in genomic medicine and technology have presented both opportunities and challenges for public health. Through lectures and case studies, the first half of the course will provide an historical overview and raise contemporary issues related to genomics at the individual, public and policy level. In the second half of the course, students will critically analyze psychosocial, behavioral, ethical and legal issues arising from increasingly widespread access to genetic technologies and information. Topics will cover the use of routine testing (prenatal testing, newborn screening and predictive testing for adult-onset conditions) and emerging technologies capable of whole genome sequencing, direct-to-consumer marketing of various kinds of genetic testing, pharmacogenomics and personalized medicine. Gordis Teaching Fellowship course open to junior and seniors only.
Instructor(s): Y. Guan
Area: Social and Behavioral Sciences.

AS.280.419. Introduction to Practical Data Analysis in Medicine and Public Health. 3.0 Credits.
The course is designed to introduce undergraduate public health majors to the methodology of data analysis, such as how to apply previously learned statistical methods in the performance of data analysis in medical and public health research. This course is unique in that it focuses on all parts of the data analysis process, from formulating a research question to synthesizing the results. While the emphasis is placed on developing and implementing various methods of data analysis, the course will also address interpreting and evaluating the strengths and limitations of existing data analyses. Students’ understanding will be solidified through small in-class activities that explore the data analysis process and evaluations of data analyses in the scientific literature, culminating in a final data analysis project relevant to their own areas of expertise for the purpose of incorporating knowledge gained from the course into their research. Gordis Teaching Fellowship course open to sophomore, junior, and seniors who have taken AS.280.345: Public Health Biostatistics.
Prerequisites: AS.280.345
Instructor(s): T. Usher
Area: Quantitative and Mathematical Sciences.
AS.280.420. Global Food and Nutrition Security. 3.0 Credits.
This course examines food insecurity in low and middle income countries from a public health nutrition perspective. Students will explore food insecurity as a complex phenomenon linked to important issues in global development and public health. Recommended prior course, either Issues in International Development or Global Health Principles & Practices. Gordis Teaching Fellowship course open to junior and seniors only.
Instructor(s): B. Caswell
Area: Social and Behavioral Sciences.

AS.280.421. Telling Public Health Stories through Maps. 3.0 Credits.
Maps play an increasingly central role in conceptualizing, investigating, and communicating many types of public health concerns. This semester-long course is intended for undergraduate students in their junior or senior year who are familiar with epidemiology and biostatistics. This course will develop the skills needed to create and manipulate spatial information for public health research and communication. The course also prepares students to critically evaluate spatial data and to identify the common pitfalls of map-making. Through a blend of lectures, student seminars, and lab exercises, students will examine and appreciate the history of map-making, its current uses in public health, and future directions of spatial analysis. This course involves active student participation during discussions, short responses to the readings, and culminates in an independent spatial analysis project involving Geographic Information Systems (GIS) software. Basic knowledge of biostatistics and epidemiology are recommended pre-requisites. Juniors/Seniors Only. Gordis Teaching Fellowship course
Instructor(s): B. Davis
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.280.422. Health Equity and Disparities: Addressing Complex Global Health Challenges. 3.0 Credits.
In this course, students will be supported and challenged to develop a personal understanding of and perspective on global health equity and disparities, and acquire a toolbox of frameworks and strategies to use in addressing them. Students will have the opportunity to be exposed to numerous examples and case studies to gain experience in assessing and addressing issues of equity in the complex, real-life problems such as those they will be facing as public health professionals. Students will review major historical and contemporary global and national initiatives to address equity issues in the health sector, including global declarations and reports as well as policies and programs that have been developed to achieve improvements in health equity in specific contexts. Application of this historical and practical knowledge and their own perspectives to new and complex situations will be fostered throughout the course. Basic knowledge of biostatistics and epidemiology and courses on global health or international public health issues recommended pre-requisites. Juniors/Seniors Only. Gordis Teaching Fellowship course
Instructor(s): M. Schleiff
Area: Social and Behavioral Sciences.

AS.280.423. Data Visualization for Individualized Health. 3.0 Credits.
This course will explore how biostatistics and data visualization can be used to improve patient care and health outcomes. Students will learn and apply key concepts of effective data visualization to applications in individualized medicine. Teams of students will work with clinician-partners of the Hopkins Individualized Health Initiative (http://hopkinsinhealth.jhu.edu) to produce interactive web applications (http://shiny.rstudio.com) that support clinical decision-making by communicating a patient’s health state, prognosis, or expected treatment outcomes. R programming experience (AS.280.419, AS.280.346, or R programming course in coursera (https://coursera.org/course/rprog)) is necessary before the start of this course.
Prerequisites: Prereq: AS.280.345
Instructor(s): R. Coley
Area: Quantitative and Mathematical Sciences.

AS.280.424. The Quest for Effective Universal Health Coverage in Low and Middle Income Countries. 3.0 Credits.
This course examines the movement to achieve effective universal health coverage with a particular focus on MICCs. It provides foundational grounding on health systems thinking to understand the key components of effective UHC and accordingly analyzes country cases to demonstrate lessons from health reforms in five LMICs.
Instructor(s): A. Bhadelia
Area: Social and Behavioral Sciences.

An elective for upper-level public health studies students with a strong biology background that reviews the basics of immunology and cancer biology, and then delves into how treatments at the interface are sparking a paradigm shift in how we understand and treat cancer. Special interest will be taken in the public health repercussions of this change in thinking and treatment. Students apply this knowledge by analyzing topics of current and potential immunotherapies such as cancer vaccinations, adoptive cell transfer therapies, immune checkpoint inhibitors, and more. Course format will be a combination of lecture and active learning activities such as facilitated discussions, case study analysis, and role-plays of system actions. Juniors/Seniors only.
Prerequisites: AS.020.151 OR AS.020.152 OR AS.020.243 OR AS.020.123 OR AP Biology
Instructor(s): J. Gordy
Area: Natural Sciences.

AS.280.426. Ethics of Obesity Prevention. 3.0 Credits.
This course introduces undergraduate PHS students to ethical issue of obesity prevention in public health, and how these issues have influenced the success or failure of past and current intervention efforts. Students explore the multiple perspectives of each issue, and use an ethical framework to learn how to address the ethical challenges associated with the development of obesity intervention programs and policy. Juniors/Seniors only.
Instructor(s): L. Redmond
Area: Social and Behavioral Sciences.
AS.280.427. Communicating Science: Skills to Analyze and Communicate Science News. 3.0 Credits.
Science communication is challenging. Experts are seldom trained to translate jargon in everyday language. In this course students will expand their knowledge of the biology basics of several public health issues, develop the critical thinking needed to assess health science reporting, and practice science communication skills.
Prerequisites: Prereq: AS.020.151 OR AS.020.152 OR AS.020.243 OR AS.020.123 OR AP Biology.
Instructor(s): N. Martin
Area: Humanities, Natural Sciences.

AS.280.428. Environmental Health and Disasters. 3.0 Credits.
Environmental Health and Disasters examines the core principles and applications of environmental health science in disaster and humanitarian emergency response. Lecture topics range from emerging infectious diseases to toxicology to climate change. Students will have the opportunity to apply lessons learned through completion of weekly in-class case studies based on recent global events. Juniors/Seniors only
Instructor(s): J. Freeman
Area: Natural Sciences, Social and Behavioral Sciences.

AS.280.429. An Introduction to Public Health Evaluation Using Population-Based Survey. 3.0 Credits.
Students will be introduced to key concepts for public health program evaluation, including how to develop evaluation research questions, common evaluation study designs, and aspects of study implementation including sample size calculation and questionnaire development. Students will become familiar with how to analyze datasets to answer global health evaluation research questions, and effectively interpret and summarize evaluation study results for key audiences. Students will get hands-on experience working with a Demographic and Health Survey (DHS) dataset to apply skills learned in each module. The DHS program provides indicators in areas of population, health, and nutrition from more than 300 surveys in 90 countries (see www.dhsprogram.com). Juniors/Seniors only
Instructor(s): E. Carter
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.280.430. Communicating Public Health Findings Through Research-Based Theatre. 3.0 Credits.
Results of public health research have the potential to catalyze positive social change, yet often need to be creatively communicated to target audiences in order to produce meaningful effects. Research-based theatre is gaining traction in the health and social sciences as a compelling and effective means of disseminating research findings to audiences beyond those that typically read scientific journal articles. Equipped with the results of a recent mixed-methods study of sexual violence on JHU campuses, students will collaboratively prepare a messaging strategy, a research-based script, print/digital materials, and an audience evaluation plan for a live campus dissemination event at the end of the semester.
Instructor(s): E. Hurley
Area: Humanities, Social and Behavioral Sciences.

AS.280.431. Beyond Borders: Migration, Ethics, and Public Health. 3.0 Credits.
This course explores the public health, ethical, and policy implications of international human migration both globally and within the United States. It is intended for upper-level undergraduate students interested in bioethics, migration, public health, and political philosophy. The first part of the course acquaints students with the various types of migrants and relevant political theory, including citizenship, freedom of movement, open/closed borders, and human rights. In the second part of the course, students discuss different ethical/philosophical concepts related to migration and apply them in analysis of a wide variety of public health and health policy cases. The course culminates with a final paper that students workshop collaboratively. This course challenges students to draw connections between ethical theory and real-world events and policies involving human migration. This is a Gordis Teaching Fellowship course.
Instructor(s): R. Fabi
Area: Social and Behavioral Sciences.

AS.280.432. Statistical Thinking for Informed Decision Making. 3.0 Credits.
Much of the science that we are exposed to on a daily basis is not through original research articles but through sources such as news reports, articles from content aggregators, and social media postings. While these convenient sources of information can be useful in some respects, it is important to read the original scientific articles on which these reports are based. Only in this way can we better understand the state of science on the issues we care about. In this course, students will primarily learn about statistical concepts within the domains of association studies, causal inference, survey analysis, and survival analysis that provide the background necessary to read a wide variety of primary research in public health. Required readings from a custom course textbook will be supplemented by in-class lecture, discussion, and guided simulation exercises. Simulation exercises will use the Shiny environment in the R programming language which allows for point-and-click style exploration and does not require any coding. All code used to create these simulation activities will be made available so that students familiar with R or who want to learn more have the chance to explore on their own time. Secondary goals of the class include (1) examining the differences between information contained in original research articles and secondary sources and (2) improving written and oral communication about statistical ideas.
Prerequisites: AS.280.345 or EN.553.112 or EN.550.211
Instructor(s): L. Myint
Area: Quantitative and Mathematical Sciences.

AS.280.433. How to Feed the World: Perspectives in Global Food and Nutrition Security. 3.0 Credits.
How do we produce not only enough food, but enough of the right kinds of food, to nourish a growing population? In this course we define global food security and position it within the landscape of nutritional problems. We then discuss key challenges associated with food production and food distribution including climate change, weak supply chains, and changing dietary patterns. Finally, we learn about current efforts to improve global food security through policies, programs, and new technologies. This course is suitable for students with an interest in food, nutrition, global health, environmental sustainability, and complex systems.
Instructor(s): M. Spiker
Area: Social and Behavioral Sciences.
AS.280.434. Public Health Nutrition in Latin America. 3.0 Credits.
This course examines drivers and determinants of health in Latin American population from a public health nutrition perspective. Students will be able to discuss the Global Nutrition Transition framework, drawing from historical public health nutrition issues in Latin America to understand current diet-related concerns and patterns. This is a discussion-based course in which students will be constantly reflecting on past and current issues and lessons learned from these countries. By the end of this course, students be able to propose future public health policies and strategies to improve the nutritional profile of the Latin American population both in Latin American Countries and in Latino immigrant communities here in the United States. Gordis Teaching Fellowship course open to junior and seniors only.
Instructor(s): A. Trude
Area: Social and Behavioral Sciences.

AS.280.435. Alcohol Use and Social Disparities: A Public Health Perspective. 3.0 Credits.
This upper-level course examines alcohol use from an ethical, epidemiological, and social justice perspective. The course is structured in three parts: 1.) Ethical issues in alcohol-related harms, 2.) Alcohol and marginalized populations, and 3.) Alcohol and injustice. This course models how to frame a complex problem from a public health perspective and teaches students to critically engage with social justice concepts. This seminar-format course incorporates guest lectures, small group exercises, case studies, and role plays. Gordis Teaching Fellowship course open to juniors and seniors.
Instructor(s): P. Trangenstein
Area: Social and Behavioral Sciences.

AS.280.436. Using Secondary Data to Conduct Public Health Research. 3.0 Credits.
Students will learn how to use administrative claims, electronic health records, and other secondary data sources to conduct public health research. The course will address privacy issues, data cleaning, creation of new variables, missing data, and documentation of data analysis decisions. Students will have the opportunity to apply course concepts to real data sets. This course is intended for undergraduates in their junior or senior year who are interested in conducting public health research with large, secondary data sets. AS.280.345 (Public Health Biostatistics) OR other introductory statistics class required. Some familiarity with R is recommended, but not required. This is a Gordis Teaching Fellowship course.
Prerequisites: AS.200.314 OR AS.230.205 OR AS.280.345 OR EN.550.211 OR EN.550.310 OR EN.550.311 OR EN.550.413 OR EN.550.420 OR EN.550.430 OR EN.560.348
Instructor(s): S. Heins
Area: Quantitative and Mathematical Sciences.

AS.280.437. Saving Newborn Lives in Low Resource Settings. 3.0 Credits.
Child mortality has declined precipitously over the past 25 years, but neonatal mortality has remained largely unchanged. Today, around the world, 45 percent of all child mortality occurs in newborns, and these deaths are overwhelmingly in low-income countries. Prematurity, events during childbirth, and infections like pneumonia and sepsis are the largest killers of newborns, and most of these deaths could be prevented with quality care during childbirth. Students will spend the first half of the course learning the direct and indirect causes of perinatal and newborn mortality and interventions that have been proven to prevent perinatal and newborn deaths in low resource settings, such as skilled birth attendance, essential newborn care, helping babies breathe, kangaroo mother care, and treatment of the sick newborn. Students will spend the second half of the course working in teams to critically evaluate newborn health in a chosen country and propose a solution that will reduce perinatal and newborn deaths. Students will have the opportunity to present their final project design to a panel of professionals working in international public health. This class is designed to be highly engaging, so students should come prepared to work in groups, debate ideas, and discuss their points of view. Students will also have the opportunity to learn how to treat a newborn who is not breathing at birth, and simulate kangaroo mother care for thermoregulation. This is a Gordis Teaching Fellowship course.
Prerequisites: (AS.280.225 OR AS.280.380) AND AS.280.350
Instructor(s): A. Bear
Area: Social and Behavioral Sciences.

AS.280.438. Reproductive Health in Crisis: Issues in Meeting the Needs of Vulnerable Populations. 3.0 Credits.
Introduces students to the reproductive health needs of over 65 million people affected by humanitarian, economic, and environmental crises globally. Presents an overview of health care delivery systems in a variety of contexts, and examines the reproductive health consequences of disruptions in service provision during times of crisis. Examines the impact of policies and programs targeting affected groups. Discusses international standards in humanitarian response. Includes discussion of maternal and newborn health, family planning, abortion, and gender based violence. Students develop competency to conduct reproductive health service needs assessments and design an emergency preparedness plan that ensures provision of essential care. For the final project, students apply their skills to plan a response program to meet the reproductive health needs of a specific crisis-affected population. This is a Gordis Teaching Fellowship course.
Instructor(s): L. Collins
Area: Social and Behavioral Sciences.

AS.280.439. Ecological Change and Infectious Disease. 3.0 Credits.
This course will introduce students to key concepts in infectious disease ecology and epidemiology. Students will also learn how key ecological changes are influencing infectious disease dynamics. Ecological changes explored in the course include climate change, water management, deforestation, agriculture, and urbanization. Gordis Teaching Fellowship course. Priority registration is given to Public Health Studies majors. Other students will be permitted to register as space allows.
Prerequisites: AS.280.350 can be taken concurrently; AS.280.335
Instructor(s): A. Lorentz
Area: Natural Sciences.
**AS.280.440. Introduction to Harm Reduction: Principles and Examples in Public Health. 3.0 Credits.**

Harm reduction is an increasingly popular paradigm in public health research and practice. This course introduces students to the principles of and current research in harm reduction. The class will focus on a) history and principles of harm reduction, and appropriate research methods; b) harm reduction & substance abuse and policy; c) harm reduction & sexual health and sex work; d) ethical considerations in harm reduction. This seminar-format course uses journal clubs, small group discussions, and interactive debates. Gordis Teaching Fellowship course. Priority registration is given to Public Health Studies majors. Other students will be permitted to register as space allows.

**Prerequisites:** AS.280.345 OR EN.553.112 OR EN.550.112 OR EN.553.211 OR EN.550.211

Instructor(s): C. Tomko

Area: Quantitative and Mathematical Sciences.

**AS.280.441. Social Media and Public Health. 3.0 Credits.**

This upper-level undergraduate research methods design course explores the growing role of social media in public health research. The course first introduces the current social media landscape, tying in different public health and health communication theories of importance to social media research. This is followed by a discussion of qualitative and quantitative research methods that have been used to conduct social media research, as well as the unique ethical considerations presented by this novel field. The course will then delve into each type of social media platform in depth, discussing how public health research has been conducted and how this ever-changing field continues to move forward. By the end of the course, students will have given explicit consideration to the strengths and challenges posed by conducting social media research in public health, and will be able to apply social media research methods to a public health issue of their interest. Some background coursework is useful, but not required. Gordis Teaching Fellowship course. Priority registration is given to Public Health Studies majors. Other students will be permitted to register as space allows.

Instructor(s): Y. Rivera

Area: Social and Behavioral Sciences.

**AS.280.442. Genetics and Public Health. 3.0 Credits.**

DNA is the code of life and variability in this code can be critical in determining human health outcomes. In a post-genomic era with increasingly advanced genetic tools and data it is critical for future public health professionals to understand the role that genetics plays in disease on the individual and population level. More and more, genetics is instructing public health interventions by informing individuals of their risk of acquiring certain diseases, explaining disease etiology, guiding treatment options in the wake of personalized medicine, and may dictate the future of genetic-based disease treatment in the form of gene therapy. The goal of this semester long course is to expand upon basic genetic concepts and apply them to understanding how variation in the human genome can impact health outcomes and inform treatment. We will look at how genetic diseases are inherited, the various ways in which they can manifest as pathology, and how they are discovered and diagnosed. We will also learn how to interpret genome wide association studies and genetic test results and explore the field of genetic counseling. We will finish by looking at the future of genetic medicine by looking at personalized medicine, gene therapy, and gene drive technologies and the potential ethical implications of these interventions. Prior genetics coursework is useful, but not required. Gordis Teaching Fellowship course. Priority registration is given to Public Health Studies majors. Other students will be permitted to register as space allows.

**Prerequisites:** AS.020.151 AND AS.020.152

Instructor(s): R. Swift

Area: Natural Sciences.

**AS.280.443. Health-Related Stigma: Concepts, Considerations, and Interventions. 3.0 Credits.**

Health-related stigma plays an important role in health and social outcomes, however its impact on individuals and populations varies according to context. Through readings, discussions, and assignments, students acquire the framework and skills to conceptualize and assess stigma across a range of health domains. To develop their understanding and analytical approach, students examine examples of HIV/AIDS, smoking, obesity, addiction, and mental health stigma. In each case, students consider key questions including: What are the forms and consequences of stigma? What theories apply? What ethical issues exist? How might interventions minimize or leverage stigma for health promotion? Throughout the semester, students also consider broader questions including: When should interventions target stigma? What are the ethical considerations in health-related stigma research? Is stigma always a threat to health? As the course places a strong emphasis on reading, critiquing, and applying health and social scientific literature, knowledge of or experience with psychology, sociology, ethics, and/or statistics is recommended but not required. Gordis Teaching Fellowship course. Priority registration is given to Public Health Studies majors. Other students will be permitted registration as space allows.

Instructor(s): K. Heley

Area: Social and Behavioral Sciences.

**AS.280.495. Honors In Public Health - Seminar. 3.0 Credits.**

Using lectures, oral presentations, and writing assignments, this seminar is designed to assist Public Health Studies majors in writing a senior thesis. Students will formulate their topics, develop research skills, and address issues of professional ethics. Participating in this seminar is required for students pursuing honors in Public Health Studies. Permission Required. Classes will be held at Bloomberg School of Public Health.

Instructor(s): A. Herbert

Area: Social and Behavioral Sciences

Writing Intensive.
Cross Listed Courses

**English**

AS.060.155. Expository Writing: Introduction to the Research Paper - Controversies in Adolescence. 3.0 Credits.

“Introduction to the Research Paper” is designed to introduce more experienced student writers to the fundamental skills of the research process. These include asking research questions, evaluating the usefulness of sources to answer them, synthesizing sources, reading sources critically, and developing arguments that deliver an original thesis. Students will work with a research librarian at the Eisenhower Library, with whom they will learn to navigate traditional databases as well as new media sources. The Research Paper is topic-based and divided into three linked units of instruction. The course culminates with a paper of 10-12 pages that draws upon the cumulative skills of the semester. Each course is capped at ten students and available only to those who have taken “Expository Writing” (060.113/114).

Instructor(s): A. Watters
Area: Humanities
Writing Intensive.

**Anthropology**

AS.070.109. Introduction to Environmental Anthropology. 3.0 Credits.

What is an “environment,” socially speaking? How have pipelines, animals, conservation, and capitalism shaped the way we talk about “nature” and “society” in the present day? This course examines the mutual transformation of humans and their environments through ethnography, environmental history, cultural and political ecology, human geography, and social theory.

Instructor(s): T. Ozden-schilling
Area: Humanities, Social and Behavioral Sciences.

AS.070.203. Healing: Politics and Poetics. 3.0 Credits.

Metaphors of health and illness; individual and social. The body in pain and the body politic. Ethnographies of historical memory vis-à-vis medicine, epidemics, sacredness, shamanism, terror, humanitarianism, truth and reconciliation.

Instructor(s): J. Obarrío
Area: Humanities, Social and Behavioral Sciences.

AS.070.327. Poverty’s Life: Anthropology of Health & Economy. 3.0 Credits.

Medicine, economics, and ethics have profoundly shaped debates on poverty. This course analyzes these debates and tracks the relationships between body, economy, and the everyday. How can anthropological reasoning and methods inform approaches to health and economic scarcity and insecurity?

Instructor(s): C. Han
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

**History**

AS.100.411. Readings in the History of Public Health in the 20th and 21st Centuries. 3.0 Credits.

The students will read major and some minor works in the history of global public health and will each develop their own concept of how and why the major institutions, professions, and practices associated with public health have evolved over the past long century. To help the students focus on their ideas, they will write three essays on particular aspects of the history.

Instructor(s): L. Galambos
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
**History of Science Technology**

**AS.140.105. History of Medicine. 3.0 Credits.**
Course provides an overview of the medical traditions of six ancient cultures; the development of Greek and Islamic traditions in Europe; and the reform and displacement of the Classical traditions during the Scientific Revolution.
Instructor(s): G. Pomata
Area: Humanities, Social and Behavioral Sciences.

**AS.140.106. History of Modern Medicine. 3.0 Credits.**
The history of Western medicine from the Enlightenment to the present, with emphasis on ideas, science, practices, practitioners, and institutions, and the relationship of these to the broad social context.
Instructor(s): G. Mooney; J. Greene; R. Packard
Area: Humanities, Social and Behavioral Sciences.

**AS.140.146. History of Public Health in East Asia. 3.0 Credits.**
This course examines the history of disease, epidemics, and public health responses in East Asia from the 17th-20th centuries. This public health history emphasizes the interactions, connections, and comparisons among China, Japan, Korea, and Taiwan.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences

**AS.140.156. Harm City? Public Health in Baltimore, 1797 to the present. 3.0 Credits.**
Explores the history of public health in urban America using Baltimore as example. Examines topics such as include infectious diseases, mental health, sanitation, rodent control, primary care, substance abuse, and STDS using frameworks of racism, classism, poverty and inequality.
Instructor(s): G. Mooney
Area: Humanities, Social and Behavioral Sciences

**AS.140.176. Public Health in East Asia Through Films & Documentaries. 1.0 Credit.**
This course uses contemporary films and documentaries to address issues in public health in East Asia, past & present. Topics covered include medicine in turn-of-the-twentieth century Japan and China, revolutionary medicine, STDS, mental illness, HIV/AIDS in China, industrial pollution, the politics of universal health care insurance, and pandemics in East Asia.
Instructor(s): M. Hanson
Area: Humanities, Social and Behavioral Sciences.

**AS.140.311. Ecology, Health, and the Environment. 3.0 Credits.**
Explores diverse problems linking ecological, environmental and public health themes, with focus on Chesapeake region. Students’ research projects can be outside Chesapeake region.
Instructor(s): S. Kingsland
Area: Humanities, Social and Behavioral Sciences

**Economics**

**AS.180.252. Economics of Discrimination. 3.0 Credits.**
This course examines labor market discrimination by gender, race and ethnicity in the United States. What does the empirical evidence show, and how can we explain it? How much of the difference in observed outcomes is driven by differences in productivity characteristics and how much is due to discrimination? How have economists theorized about discrimination and what methodologies can be employed to test those theories? What has been the impact of public policy in this area; how do large corporations and educational institutions respond; and what can we learn from landmark lawsuits? The course will reinforce skills relevant to all fields of applied economics, including critical evaluation of the theoretical and empirical literature, the reasoned application of statistical techniques, and analysis of current policy issues. Seniors by Permission Only.
Prerequisites: AS.180.102
Instructor(s): B. Morgan
Area: Social and Behavioral Sciences
Writing Intensive.

**AS.180.289. Economics Of Health. 3.0 Credits.**
Application of economic concepts and analysis to the health services system. Review of empirical studies of demand for health services, behavior of providers, and relationship of health services to population health levels. Discussion of current policy issues relating to financing and resource allocation.
Prerequisites: AS.180.102
Instructor(s): D. Bishai
Area: Social and Behavioral Sciences.

**AS.180.390. Health Economics & Developing Countries. 3.0 Credits.**
Prerequisites: AS.180.301 or AS.180.401; Students may not take AS.180.390 if they took AS.180.391.
Instructor(s): M. Gersovitz
Area: Social and Behavioral Sciences
Writing Intensive.

**Political Science**

**AS.190.405. Food Politics. 3.0 Credits.**
This course examines the politics of food at the local, national, and global level. Topics include the politics of agricultural subsidies, struggles over genetically modified foods, government efforts at improving food safety, and issues surrounding obesity and nutrition policy. Juniors, seniors, and graduate students only. Cross-listed with Public Health Studies.
Instructor(s): A. Sheingate
Area: Social and Behavioral Sciences
Writing Intensive.

**Philosophy**

**AS.150.219. Introduction to Bioethics. 3.0 Credits.**
Introduction to a wide range of moral issues arising in the biomedical fields, e.g. physician-assisted suicide, human cloning, abortion, surrogacy, and human subjects research. Cross-listed with Public Health Studies.
Instructor(s): H. Bok
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
Writing Seminars

AS.220.309. Writing Healthy Baltimore. 3.0 Credits.
Students will explore public health issues in Baltimore and then write about them first in short pieces, and then in longer, polished works. The framework will be the mayor’s Healthy Baltimore 2015 initiative – launched in 2011 to address the city’s top-10 public health problems, including obesity, smoking, drug and alcohol abuse, STDs, cancer, and environmental health hazards. Students will study the initiative and its historical context; examine data sets; explore where and how the initiative intersects with public health practitioners and advocacy groups at the neighborhood level; and write what they learn in different formats, including essays, breaking news, and substance analysis. Students will then “workshop” each other’s papers.
Instructor(s): K. Masterson
Area: Humanities
Writing Intensive.

Sociology

AS.230.150. Issues in International Development. 3.0 Credits.
Why do billions of people continue to live in poverty? What obstacles stand in the way of secure and dignified lives for all? Who is most likely to bring about change, what strategies should they follow, and what kinds of institutions should they put in place? This course will introduce the main theoretical perspectives, debates, and themes in the field of international development since the mid-20th century. It has three sections. The first section focuses on debates over the optimal conditions and strategies for generating economic growth and on the relationship between growth, human welfare, and inequality. The second section presents critical assessments of development interventions from various perspectives. The third section considers the role of social movements in shaping development and social change in the 21st century.
Instructor(s): M. Levien
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.154. Freshman Seminar: Gender, Health and Aging. 3.0 Credits.
In this course students will develop an understanding of the ways in which gender structures health and well being through adulthood and later life. The experience of sexual minorities and the intersection of gender with class and ethnicity will also be discussed. Students will be expected to participate actively and lead discussions on specific topics.
Instructor(s): E. Agree
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.324. Gender and International Development. 3.0 Credits.
This course employs a comparative perspective to examine the gendered impact of international development experiences and policies. Students will discuss the historical evolution of how the concept of gender has been constructed, conceptualized, and integrated into international development theory and practice. The course will also examine how greater international development. In particular, we will examine structural theories of poverty reduction, individual theories of power and processes of stratification at the household and family level. Specific issue areas will include the globalization, class and work political participation and social movements. Cross-listed with International Studies (CR IR). Fulfills Economics requirement for IS GSCD track students only.
Instructor(s): R. Agarwala
Area: Social and Behavioral Sciences.

AS.230.335. Medical Humanitarianism. 3.0 Credits.
Humanitarian organizations play life-preserving roles in global conflicts, and have front-row views of disasters ranging from the 2010 Haiti earthquake to the 2011 Fukushima tsunami in Japan. Yet even while they provide vital assistance to millions of people in crisis, such organizations are beset by important paradoxes that hinder their capacity to create sustainable interventions. They work to fill long-lasting needs, but are prone to moving quickly from one site to the next in search of the latest emergency. They strive to be apolitical, yet are invariably influenced by the geopolitical agendas of global powers. How do such contradictions arise, and what is their impact upon millions of aid recipients around the world? Drawing on case studies from South Sudan to Haiti, this course addresses these contradictions by exploring how and why medical aid organizations attempt, and sometimes fail, to reconcile short-term goals, such as immediate life-saving, with long-term missions, such as public health programs and conflict resolution initiatives.
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.341. Sociology of Health and Illness. 3.0 Credits.
This course introduces students to core concepts that define the sociological approach to health, illness and health care. Topics include: health disparities, social context of health and illness, and the Sociology of Medicine.
Instructor(s): E. Agree
Area: Social and Behavioral Sciences

AS.230.358. The Politics of Mental Health. 3.0 Credits.
This course examines how the psy disciplines – psychology, psychiatry, psychotherapy and related fields – create knowledge about the mind, and how these fields have in turn shaped political and social life since early 20th century. We will explore how the psy disciplines have proven useful to projects of state building by reconstructing the human mind as a calculable, quantifiable entity, one that can be measured and governed across diverse educational, military, and healthcare settings. We will then ask how psychiatric categories such as bipolar disorder and PTSD (post-traumatic stress disorder) were created, and consider their impact on both the legal/medical management of illness and on lay and expert notions of sanity and normality. Finally, we will examine the rising influence of humanitarian mental health interventions, and immerse ourselves in the debates they have engendered concerning the use of psychotherapy to alleviate suffering in war and disaster zones.
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.
Instructor(s): B. Zaitchik; D. Waugh

AS.271.360. Climate Change: Science & Policy. 3.0 Credits.
This course takes a critical interdisciplinary approach to these questions through a series of global case studies ranging from humanitarian aid in post-tsunami Sri Lanka to anti-FGM (female genital mutilation) campaigns in Ghana. How do international NGOs, UN bodies, and governments collaborate (or compete) to distribute healthcare in places beset by dire resource shortages? Do human rights principles carry legal weight across borders, and if so, could access to healthcare services and essential medicines be litigated in order to compel governments to provide it? And finally, what cultural assumptions do human rights discourses carry with them, and what happens if rights-based approaches are poorly received by recipient populations? Moving beyond the basic principle of healthcare as a human right, this course aims to bring this idea's history and politics into focus by offering an in-depth exploration of its ethics and implementation.
Instructor(s): R. Kelly.
Area: Social and Behavioral Sciences
Writing Intensive.

Earth Planetary Sciences
AS.270.308. Population/Community Ecology. 3.0 Credits.
This course explores the distribution and abundance of organisms and their interactions. Topics include dynamics and regulation of populations, population interactions (competition, predation, mutualism, parasitism, herbivory), biodiversity, organization of equilibrium and non-equilibrium communities, energy flow, and nutrient cycles in ecosystems. Field trip included. Permission of instructor.
Instructor(s): K. Szlavecz
Area: Natural Sciences.

AS.271.107. Introduction to Sustainability. 3.0 Credits.
Humans are having such a massive impact on Earth systems that some call this the Anthropocene epoch. Should we consider this state of affairs progress or catastrophe? How to we find a sustainable path to the future? This course provides an interdisciplinary introduction to the principles and practice of sustainability, exploring such issues as population, pollution, energy and natural resources, biodiversity, food, justice, and climate change through the lens of systems thinking. Course open to freshmen, sophomores, and juniors. Seniors by instructor permission only.
Instructor(s): R. Kelly.

AS.271.360. Climate Change: Science & Policy. 3.0 Credits.
Prereq: 270.103 or permission of instructor. This course will investigate the policy and scientific debate over global warming. It will review the current state of scientific knowledge about climate change, examine the potential impacts and implications of climate change, explore our options for responding to climate change, and discuss the present political debate over global warming.
Instructor(s): B. Zaitchik; D. Waugh
Area: Natural Sciences.

Interdepartmental
AS.360.115. Discover Hopkins Health: Food, Nutrition & Public Health. 1.0 Credit.
With the creation of President Barack Obama’s Task Force on Childhood Obesity, there is finally a national focus on the importance of childhood nutrition. First Lady Michelle Obama spearheads the “Let’s Move!” initiative, dedicated to the goal of eradicating childhood obesity through an emphasis on diet and physical activity. This class will tackle the issue of food, nutrition and health from the ground up; looking at multiple behavioral, cultural, and environmental factors that influence what and why we eat. We will also look at how our food systems and eating habits impact the health of individuals, communities, our country, and the world. In this two week session students will have a variety of experiences including trips to a Baltimore city urban farm, the Maryland Food Bank, farmer’s markets, one of Baltimore’s traditional public markets, and a sustainably-sourced restaurant. Students will hear guest speakers from the academic and government sectors.
Instructor(s): C. Burns; S. Lee; Y. Mui
Area: Social and Behavioral Sciences.

Center for Africana Studies
AS.362.325. The Role of “Place” in Racial Ethnic Health Disparities. 3.0 Credits.
This course will introduce students to racial/ethnic health disparities, the need to examine the role of “place”, give different definitions of “place”, how the characteristics of where people live affects individual’s health, and how this leads to racial/ethnic health disparities. The course will first examine large-scale measures of place, then down to smaller scale measures. Students will discuss various theories generally associated with racial/ethnic health disparities, as well as, the extension of “place” theories to this topic. Students will apply this knowledge through various assignments and activities about racial/ethnic health disparities of interest. These activities include class discussions, group assignments and development of interventions and solution-focused policy recommendations. This course is being offered for sophomores, juniors and seniors who have completed a statistic course or who have received permission from the instructor.
Prerequisites: Students may receive credit for AS.280.411 or AS.362.325, but not both.
Instructor(s): C. Bell
Area: Humanities.

AS.362.371. Public Health Crisis in Africa. 3.0 Credits.
This course examines the historical and current public health crises in Africa. Topics covered include infectious diseases and viral outbreaks, water and food access, sanitation, education, behavioral health, gender equality, health care and health care access, as well as the link between culture, economics and health. Introduction to Epidemiology is recommended but not required.
Instructor(s): M. Smart
Area: Humanities, Social and Behavioral Sciences.

Environmental Health and Engineering
EN.570.108. Introduction Environmental Engineering. 3.0 Credits.
Overview of environmental engineering including water/air quality issues, water supply/ wastewater treatment, hazardous/solid waste management, pollution prevention, global environmental issues, public health considerations/environmental laws, regulations and ethics. Cross-listed with Public Health Studies.
Instructor(s): H. Alavi
Area: Engineering.
Social Policy

http://krieger.jhu.edu/fields/social-policy/

Social policy is the study of policy solutions to the problems of education, inequality, poverty, crime, and other issues faced by society’s families and children. It is an interdisciplinary field to which the disciplines of economics, sociology, and political science contribute in equal measure. It is a basic-science field with a strong applied-research focus that can prepare students for careers in government, nonprofits, and the private sector. Students who undertake the social policy minor will work with faculty who are experts in the study of poverty, the labor market, social demography, family structure, educational inequality, political participation, organizational dynamics, and health and welfare policy. They will be strongly grounded in social science training and will apply that training to real-world applications and policies. In the minor, students will be motivated to think about how knowledge translates into policy solutions, making this an appropriate specialization for young people who plan to attend law school, programs in public health, or graduate school in the constituent social science field.

Requirements of the Minor

A Social Policy minor is offered jointly by the Departments of Economics, Political Science, and Sociology. To complete the minor, students must take an introductory course, Introduction to Social Policy and Inequality, Baltimore and Beyond; a 300-level social policy elective in one of the three departments; the Baltimore Policy Fellowship; and a capstone course to be taken after the semester is completed. The preferred sequence is for students to take the introductory course in their freshman or sophomore years, the elective in the fall of their junior year, the Baltimore Policy Fellowship semester in the spring of their junior year, and the capstone course in their senior year. However, modifications in the sequence will be considered. The Fellowship semester will involve course work focusing on urban and national social policy problems coupled with an internship in Baltimore or Washington in a governmental agency or non-governmental organization that is involved with some aspect of social policy, or as a research assistant to a faculty member conducting research on social policy. The capstone course will involve discussion and research among students who have completed the Fellowship semester and is intended to build upon experiences in that semester.

Enrollment in the Fellowship semester will be limited to 15 and requires application and admission. The Social Policy Minor is grounded in the three disciplines and priority will be given to students who are majoring in Economics, Political Science, or Sociology, but students with other majors will be considered.

A list of electives to be used to fulfill the 300-level social policy elective is available on the Social Policy Program website (http://krieger.jhu.edu/socialpolicy). Students can identify these courses in the schedule of classes as they will have a POS-Tag of SPOL-UL.

Students interested in the minor should contact the Director of the Social Policy Program, by sending a message to socialpolicy@jhu.edu.

All courses must be taken for a letter grade and a grade of C- or better must be earned in all minor requirements.

Course Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.360.247</td>
<td>Introduction to Social Policy: Baltimore and Beyond</td>
<td>3</td>
</tr>
<tr>
<td>AS.360.401</td>
<td>Social Policy Seminar</td>
<td>3</td>
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</tbody>
</table>

One 300- or 400-level approved social policy elective course from the Economics, Sociology, or Political Science Department

Baltimore Policy Fellowship semester 15

Faculty

Professors
- Andrew Cherlin
- Benjamin H. Griswold III Professor of Public Policy and Chair (Sociology)
- Stefanie DeLuca
- James S. Coleman Professor (Social Policy & Sociology)
- Robert Lieberman
- Krieger-Eisenhower Professor (Political Science)
- Robert Moffitt
- Krieger-Eisenhower Professor (Economics)
- Adam Sheingate
- Professor and Chair (Political Science)
- Steven Teles
- Professor (Political Science)

Associate Professor
- Vesla Weaver
- Bloomberg Distinguished Associate Professor (Political Science & Sociology)

Assistant Professor
- Daniel Schlozman
- Joseph and Bertha Bernstein Assistant Professor (Political Science)

Senior Lecturer
- Barbara Morgan
- Senior Lecturer (Economics)

Sociology

http://soc.jhu.edu/

The Department of Sociology concentrates on two broad areas at the graduate and undergraduate levels: Global social change, which focuses on cross-national, comparative research; and social inequality, which primarily focuses on family, education, work, race, gender, policy, and immigration.

These concentrations trace back to the department’s founding in 1959 by renowned American sociologist James Coleman. The department has since earned a reputation as one of most selective, personalized sociology departments in the U.S. Currently home to 17 faculty members including 2 Bloomberg Distinguished Professors, 36 graduate students, and roughly 80 undergraduates, the department offers a uniquely intimate scholarly atmosphere in which faculty and students interact and collaborate frequently.

Scholars in the department share a wide variety of interests and interdisciplinary partnerships. Students are given flexible parameters for their study, and several faculty members have been honored with joint appointments in other Johns Hopkins schools and divisions. The department shares a unique relationship with the Bloomberg School of Public Health, which offers faculty and students access to first-rate collaborations in fields such as population and demography, mental health and mental hygiene, and healthcare organization. The department
is also proudly partnered with the Department of Applied Mathematics and Statistics and is committed to building and maintaining strong foundations in quantitative research methods.

**Undergraduate Programs**

**Major in Sociology**

A major in sociology offers undergraduates a variety of post-graduation opportunities. Graduates from the department have found positions in financial institutions, education, non-governmental organizations focusing on international development, research departments of major corporations, and local government social service agencies. Others continue to graduate school in sociology, public health, law, urban planning, and education. A major in sociology can also be combined with the pre-medical course sequence, resulting in a medical school candidate who is well versed in the hard science of the human body and the social science of the human experience. For more details, please visit [http://soc.jhu.edu/undergraduate/](http://soc.jhu.edu/undergraduate/).

**Requirements for a B.A. Degree**

(Also see Requirements for a Bachelor’s Degree (p. 7).)

The required courses for a major in sociology provide students with a fundamental understanding of sociological theory, methods, and social statistics. Beyond these core requirements, elective courses are offered on a range of important sociological themes, including gender and family, social structure and personality, education, race and ethnicity, immigration, political sociology, international development, and the evolution of a world social system.

### Core Courses

- **AS.230.101** Introduction to Sociology 3
- **AS.230.202** Research Methods for the Social Sciences 3
- **AS.230.205** Introduction to Social Statistics 4
- **AS.230.213** Social Theory 3
- **AS.230.322** Quantitative Research Practicum 3
  or **AS.230.323** Qualitative Research Practicum 3
  or **AS.230.325** Global Social Change and Development Practicum 3

### Sociology Electives *

- Six elective courses in sociology, at least four must be non-introductory courses (at the 200-level or above) 18

### Additional Social Science Electives

- Three non-sociology courses at any level carrying a social and behavioral sciences area designator in at least two other departments or programs 9

* One elective course may be fulfilled by combining 1 or 2 credit courses for a total of at least 3 credits. All other elective courses must be at least 3 credit courses. Up to two of the six sociology electives and one of the three other social science electives may be independent study or independent research courses (at least 3 credits) supervised by Hopkins faculty. Only one course taken in the summer at JHU may apply towards the sociology electives.

All courses must be taken for a letter grade and a grade of C or better is required.

Foreign language study is not required, but it is strongly encouraged, especially for students considering graduate or professional study.

**Sample Program**

A typical program might include the following sequence of courses:

**Freshman**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.230.101 Introduction to Sociology</td>
<td>3</td>
<td>Lower-level sociology elective</td>
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<td>Lower-level sociology elective</td>
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**Sophomore**

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<th>Credits</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>AS.230.202 Research Methods for the Social Sciences</td>
<td>3</td>
<td>&quot;S&quot; credit from non-sociology elective</td>
<td>3</td>
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<td></td>
<td></td>
<td>Upper-level sociology elective</td>
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<td>AS.230.205 Introduction to Social Statistics</td>
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**Junior**

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<tbody>
<tr>
<td>AS.230.213 Social Theory</td>
<td>3</td>
<td>AS.230.322 Quantitative Research Practicum</td>
<td>3</td>
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<td></td>
<td></td>
<td>Upper-level sociology elective</td>
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<td>&quot;S&quot; credit from non-sociology elective</td>
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**Senior**

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<th>Fall</th>
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<tbody>
<tr>
<td>Upper-level sociology elective</td>
<td>3</td>
<td>Upper-level sociology elective</td>
<td>3</td>
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<tr>
<td>&quot;S&quot; credit from non-sociology elective</td>
<td>3</td>
<td>Upper-level sociology elective</td>
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Total Credits: 46

**Senior Honors Program**

The senior year Honors Program affords highly motivated and qualified students the opportunity to pursue, with faculty guidance, a research project of their own design. The Honors Program culminates in an honors thesis; a substantial work of original scholarship. Prerequisites and requirements for the program are as follows:

- All the requirements of a traditional major in sociology.
- Minimum 3.5 GPA in all sociology courses.
- Declaration of intention to enroll in Senior Honors Program to faculty advisor by the end of the junior year.
- At least two 300-level courses in sociology by the end of the junior year.
- Enrollment in the year-long AS.230.502 Senior Honors Program.
- Completion and faculty approval of honors thesis.

For more information on the Senior Honors Program, contact your faculty advisor.
Social Policy Minor
The Social Policy minor (p. 632) brings an interdisciplinary focus to the many social problems facing a city such as Baltimore and the nation as a whole, and encourages the search for policy solutions to those problems.

Global Social Change and Development Track
The Global Social Change and Development (GSCD) Track (http://krieger.jhu.edu/arrighi/undergraduate/gscd) is geared towards students interested in understanding critical issues surrounding contemporary processes of globalization and international development. The track provides students with a sophisticated set of research and critical-thinking skills, prepares students for twenty-first century professions and helps them to become thoughtful global citizens. Ultimately, students pursuing the Global Social Change and Development track will receive a double major in both International Studies and Sociology.

Alpha Kappa Delta (AKD) Honor Society
In spring 2006, the Sociology department was awarded a chapter of the AKD sociology honor society. The chapter welcomed eleven new initiates that year, two faculty members, two new graduate students, and seven undergraduates. We now have over 70 members.

AKD is an open, democratic, international society of scholars dedicated to the ideal of Athrhoon Katamanthein Diakonesein or “to investigate humanity for the purpose of service.” AKD seeks to acknowledge and promote excellence in scholarship in the study of sociology, the research of social problems, and other social and intellectual activities that will lead to improvement of the human condition. AKD was founded at the University of Southern California in 1920 and affiliated with the Association of College Honor Societies in 1967. There are more than 97,000 lifetime members and over 600 chapters of the Society. These are persons with academic records showing excellence in sociology.

Initiates receive a chapter pin, a certificate of membership, and a membership activation form. Members who submit completed activation forms receive a one-year subscription to Sociological Inquiry, the official journal of the Society, the Alpha Kappa Delta Newsletter, election materials, and other services. In addition, the Society sponsors student paper contests, provides honoraria for initiation speakers, provides funds for student travel to regional sociological meetings, funds research symposia, sponsors a distinguished lecture series at the Annual Meeting of the American Sociological Association, and contributes annually to the ASA Minority Scholarship Fund. AKD members wear AKD honor cords at graduation ceremonies. AKD chapters are important in the academic, professional, and social lives of student and faculty members. They provide opportunities for initiating and sharing activities in keeping with the purposes of the Society.

To be eligible for membership, majors must have at least junior year standing, an overall GPA of at least 3.0, a sociology GPA of at least 3.5, and have taken at least four courses in sociology.

Election to Alpha Kappa Delta is without regard to race, creed, or national origin. For more information, interested students should contact the AKD Faculty Chapter Representatives: Meredith Greif (mgreif1@jhu.edu) & Katrina McDonald (kmcdon@jhu.edu).

James S. Coleman Award
This award was established by the Department of Sociology in 1994 in honor of Dr. James S. Coleman, first chair of the department. The award is for outstanding academic achievement by a senior majoring in sociology.

Graduate Programs
The department’s primary educational goal is to train first-class sociology Ph.D.’s. The sociology graduate experience at Johns Hopkins is best characterized as a research apprenticeship – a careful blend of formal instruction, faculty-directed individual study, and supervised as well as self-initiated research. The department’s small size and specific concentrations yield a personalized course of study and close relationships with faculty members and fellow graduate students. The social climate is informal, and the mix of students and faculty, drawn from a wide variety of geographic and social backgrounds, constitutes a rewarding intellectual community. For more details, please visit http://soc.jhu.edu/graduate/.

Admissions
Applicants must submit an application fee, personal statement, GRE scores, all college transcripts, at least two (preferably three) letters of recommendation, and a sample of written work. International applicants must also submit a TOEFL score and a financial statement (FS-1G Form: Graduate International Student Notification [F-1/J-1]). Applicants should have a broad background in social science, especially sociology, economics, and psychology. Training in mathematics is encouraged. The department gives greatest weight to an applicant’s demonstrated ability and past performance. For more details, please visit http://soc.jhu.edu/graduate/admissions/.

Requirements for the Ph.D. Degree
Core Curriculum
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AS.230.600</td>
<td>Introduction to Social Statistics</td>
</tr>
<tr>
<td>AS.230.602</td>
<td>Theories of Society</td>
</tr>
<tr>
<td>AS.230.603</td>
<td>Contemporary Social Theory</td>
</tr>
<tr>
<td>AS.230.604</td>
<td>Linear Models for the Social Sciences</td>
</tr>
<tr>
<td>AS.230.608</td>
<td>Proseminar in Sociology</td>
</tr>
<tr>
<td>AS.230.643</td>
<td>Sociological Analysis</td>
</tr>
<tr>
<td>AS.230.649</td>
<td>Qualitative Research Methods: Domestic and International Fieldwork</td>
</tr>
<tr>
<td>or AS.230.650</td>
<td>Macro-Comparative Research</td>
</tr>
</tbody>
</table>

* This fall semester course is taken during the first year. Faculty presentations introduce students to the substantive interests, research and professional background of the sociology faculty. It is graded pass/fail.

To count toward degree requirements, core curriculum courses other than the Trial Paper Research series of courses must be passed with a grade of B- or higher. After the core course requirement is satisfied, additional methods courses from the list above may be used to fulfill the nine-semester course requirement.

Electives
In addition to the core curriculum, graduate students must enroll in seven additional graduate-level courses. At least four of the seven electives must be JHU Sociology department courses. Up to four of the seven electives may be fulfilled by a combination of: 1) credit awarded for previous graduate coursework that predates matriculation at JHU; 2) courses taken outside the department that are permissible under the Handbook rules and with the Departmental advisor’s approval; 3) and one directed research and independent study courses within the Department. All must be passed with a grade of B- or higher. While students are free to select these courses, the department strongly recommends that they be
taken from diverse fields of specializations so as to maximize the breadth of exposure to core areas of sociology and other disciplines.

Teaching Assistantships
As part of their preparation for future academic work, graduate students are required to register for AS.230.811 Teaching Assistantship and serve as a teaching assistant for at least one semester.

Foreign Language
The Sociology Department no longer requires certification of fluency in a foreign language as part of the Ph.D. requirements. Students should be proactive in gaining the language skills necessary to conduct their TRP and dissertation research, and should work closely with their advisor to determine whether additional language education is needed.

Residence
A minimum of two consecutive semesters of full-time residence is mandatory for all degrees. However, at least six semesters of full-time residence is recommended by the department for completion of the core curriculum, electives, and completion of a research apprenticeship and a trial research paper. By the end of the fourth year in the program, the student is expected to have written a dissertation proposal and have defended it successfully before the appropriate examining committees.

Research Assistantship/Apprenticeship
AS.230.801 and AS.230.804

Students are required to develop practical research expertise through professional-level participation (data analysis, literature searches/reviews, non-routine data processing or coding, preparation and refinement of research instruments, and data/file management). This requirement is fulfilled by satisfactorily completing a Research Apprenticeship, which is required during the student’s first year of full-time graduate study in the department. The standard for certification is substantial research accomplishment as judged by the faculty supervisor.

Trial Research Paper
(AS.230.685, AS.230.690, AS.230.815, AS.230.816, AS.230.817)

The Trial Research Paper (TRP) affords students the experience of planning and executing a research project that leads to a scholarly paper. The TRP is expected to be a serious, complete work of scholarship, suitable for conference presentation or journal submission. Work on the TRP generally will be done over three semesters with students registering for a total of five TRP courses. By the end of the fall semester of their second year, students should invite a faculty sponsor to supervise the design and execution of the TRP project. A TRP proposal must be approved by the faculty sponsor by the end of the spring semester of the second year. By the end of the fall semester of the third year, the faculty sponsor must approve a draft of the paper which will then be reviewed by another department faculty member. The faculty sponsor, at her or his discretion, may extend this deadline to the end of the intersession period following the fall semester. The faculty reviewer will evaluate the paper and, if necessary, recommend revisions that should be made before the paper is certified. The faculty sponsor will determine required revisions and must certify a final TRP by the end of the spring semester of the third year.

Dissertation
The student must propose and conduct original research presented in a dissertation suitable for publication. The department administers an oral examination which must be passed before the student is allowed to defend before a university board. The dissertation must then be defended either at a Graduate Board preliminary oral examination, based on the dissertation proposal, or at a Graduate Board final oral examination, based on the completed dissertation.

Special Programs
The department offers two special programs that coordinate activities in its two areas of concentration. Doctoral students may affiliate with one or both of these programs at their discretion. These programs function as fields of doctoral specialization within the Department of Sociology.

Program on Global Social Change (PGSC)
This concentration of graduate study focuses on cross-national, comparative research and long-term, world-scale social change. The goal of the program is to give students knowledge of the various theoretical perspectives in these areas, experience in data collection and analysis, and expertise in one or more substantive fields.

The program does not focus on a particular geographic area, although faculty members have conducted extensive research on Latin America, Africa, Asia, the Middle East, and Eastern and Southeastern Europe. Instead of a geographical approach, the emphasis is on issues of development and social change that cut across different countries and world regions. Examples are globalization and regionalization, labor and development, city systems and urban primacy, social movements and revolutions, state violence, migration and labor force formation, family structure and change, social structure and personality, and national and international stratification. Students enroll in a sequence of courses and seminars and participate actively in ongoing faculty projects dealing with one or more of the above issues.

In addition, the interdisciplinary character of graduate education at Johns Hopkins offers students ample opportunity to enroll in courses or collaborate in research of faculty in other departments. Faculty associates of the program include distinguished scholars in anthropology, economics, geography, history, political science, and public health.

A graduate concentration is not required of Ph.D. students.

Program on Social Inequality (PSI)
This concentration of graduate study focuses on the causes and consequences of social inequality, the social processes that sustain it, and how social policies can reduce it. These questions are addressed in terms of class, gender, race, ethnicity, and immigration status/citizenship.

The program is designed to train students in the sociological analysis of social inequality among individuals and groups. This training includes course work in areas such as social stratification, the sociology of the family, the sociology of education, sociology of immigration, social structure and personality, social policy, and research design and methods. Students in the PSI program enroll in a sequence of courses and seminars and participate actively in ongoing faculty projects dealing with one or more of the above issues.

In addition, the interdisciplinary character of graduate education at Johns Hopkins offers students ample opportunity to enroll in courses or collaborate in research with faculty in other departments. Faculty associates of the program include distinguished scholars in anthropology, economics, geography, history, political science, and public health.

A graduate concentration is not required of Ph.D. students.
Joint Program: Doctorate in Sociology and Master's in Applied Mathematics and Statistics

The Department of Sociology, Krieger School of Arts and Sciences, and the Department of Applied Mathematics and Statistics, Whiting School of Engineering, announce a joint program leading to a Ph.D. in Sociology and an M.A. or M.S.E. in Applied Mathematics and Statistics. The purpose of the joint program is to offer Sociology doctoral students an opportunity to acquire advanced statistical knowledge and applied research skills.

The joint program requirements include all the Ph.D. requirements in Sociology and the specially designed requirements for an M.A. or M.S.E. in Applied Mathematics and Statistics. For Sociology Ph.D. requirements, see the Sociology Ph.D. Students Handbook. Applied Mathematics and Statistics courses may substitute for AS.230.600 Introduction to Social Statistics and AS.230.604. Two options for fulfilling the requirements are available for an M.A. or M.S.E. in Applied Mathematics and Statistics. For both options, students are required to meet the Applied Mathematics and Statistics department's computing requirement (fulfilled through EN.553.413 Applied Statistics and Data Analysis), the purpose of which is to ensure that students are able to effectively use computers to solve mathematical problems.

Note: All Joint Program students are required to complete Responsible Conduct of Research (RCR) training, which is in addition to the HIPPA training required for the sociology Ph.D.

For more information, please visit http://soc.jhu.edu/graduate/jointprogram/.

Facilities
Each resident graduate student is provided office or desk space to conduct his or her studies and research. In addition, the department has a computer lab with a network of computers and printers for graduate student use. Close working relationships exist with other JHU Centers & Programs which provide excellent opportunities for research training.

Financial Aid
The department strives to provide five years of financial aid for all students who are in good academic standing. Eligibility for financial aid in the fifth year ordinarily requires successful oral defense of the dissertation proposal by May 31, following their fourth year in the Ph.D. program.

The department has a number of assistantships that are awarded each year to graduate students in the Ph.D. program. Opportunities are also available for graduate students to work as salaried research assistants with members of the Sociology faculty and staff at associated research centers.

For current faculty and contact information go to http://soc.jhu.edu/directoryindex/faculty/

Faculty
Chair
Andrew J. Cherlin
Benjamin H. Griswold III Professor of Public Policy; sociology of the family, demography, social policy.

Professors
Stefanie A. DeLuca
James S. Coleman Professor of Sociology and Social Policy; sociology of education, sociology of neighborhoods, life course studies.

Lingxin Hao
Sociology of the family, public policy, immigration, social inequality, sociology of education, quantitative methodology.

Ho-fung Hung
Henry M. and Elizabeth P. Wiesenfeld Associate Professor in Political Economy; global political economy, contentious politics, nationalism, and social theory.

Stephen L. Morgan
Bloomberg Distinguished Professor; education, inequality, demography, and methodology.

Beverly J. Silver
Historical capitalism, comparative and world-historical research methods, global inequality and development, labor and social movements.

Associate Professors
Rina Agarwala
International development, gender, labor, migration, globalization, India.

Joel Andreas
Post 1949 Chinese society, transitions to and from socialism, industrial democracy, education and class reproduction.

Katrina Bell McDonald
Sociology of the family, gender/ethnic identity, race and social class.

Vesla Weaver
Bloomberg Distinguished Associate Professor; racial inequality in the United States, how state policies shape citizenship, and the political causes and consequences of the growth of the criminal justice system in the United States.

Assistant Professors
Julia Burdick-Will
Urban sociology, education, stratification.

Ryan Calder
Economic sociology, political sociology, political economy, Middle East, Southeast Asia, Globalization, finance, Islamic banking, Islamic jurisprudence.

Meredith Greif
Race, urban sociology, and health in developing countries.

Michael Levien
Political and developmental sociology.

Christy Thornton
Comparative-historical sociology, global inequality and development, labor and social movements, political economy of Mexico and Latin America.

Professors Emeriti
Karl L. Alexander
Academy Professor in The Academy at JHU/KSAS; sociology of education, social stratification.

Melvin L. Kohn
Academy Professor in The Academy at JHU/KSAS; social structure and personality, cross-national comparative analysis, social class and stratification, sociology and social psychology of work.

Joint Appointments
David M. Altschuler
Adjunct Associate Professor (Institute for Policy Studies) Bloomberg School of Public Health; de-institutionalization and community-based services, delinquency and criminal justice, voluntary organizations and philanthropy, social policy.

Stanley Becker  
Professor, Bloomberg School of Public Health; demography.

Joyce Epstein  
Research Professor, School of Education (Center for Social Organization of Schools); sociology of education, evaluation research, social psychology.

Kelly Gebo  
Adjunct Assistant Professor, School of Medicine; medical sociology and mental health.

Gail Geller  
Professor, School of Medicine; ethical, social and cultural implications of genetic advances in the adult, pediatric and family contexts.

Jeffrey Grigg  
Assistant Professor, School of Education (Center for Social Organization of Schools); sociology of education, research methods, school reform, social stratification, organization of schooling.

Thomas A. LaVeist  
Professor, Bloomberg School of Public Health; medical sociology, mortality, health services, aging.

Vincente Navarro  
Professor, Bloomberg School of Public Health; health and social policy, international health, health care policy.

Katherine Smith  
Associate Professor, Bloomberg School of Public Health; social determinants of health behavior.

Marc Stein  
Assistant Professor, School of Education; neighborhoods, school choice, academic achievement.

Research Professor/Lecturers  
Emily Agree  
Research Professor; gerontology demography.

Ilil Benjamin  
Lecturer; Israel/Palestine, Humanitarianism, Asylum and refugees studies.

Huei-ying Kuo  
Associate Research Professor; Chinese diasporic business networks, Japanese and British imperialism, as well as Chinese nationalism in East and Southeast Asia.

Stuart Schrader  
Lecturer/Assistant Research Scientist; security, policing, and counterinsurgency; the entwinement of foreign and domestic policy; and urbanization.

Sydney Van Morgan  
Director of International Studies/Senior Lecturer

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

**AS.230.101. Introduction to Sociology. 3.0 Credits.**
Introduces students to basic sociological concepts and perspectives, and applies them to a variety of topics including family, work, and the dynamics of class, gender, and racial/ethnic inequalities in the United States and globally.
Instructor(s): E. Agree; R. Calder  
Area: Social and Behavioral Sciences.

**AS.230.109. Freshman Seminar: Hot Topics in Education. 3.0 Credits.**
This course examines current school reform initiatives and the controversies surrounding them through a sociological lens. Freshmen Only  
Instructor(s): J. Burdick-Will  
Area: Social and Behavioral Sciences  
Writing Intensive.

**AS.230.137. Special Opportunities in Undergraduate Learning: Exploring Baltimore: An Introduction to Urban Studies. 1.0 Credit.**
Through an exploration of urban topics, this course will introduce students to data collection and analysis methods used in the social sciences. Students will discuss relevant research published by Johns Hopkins faculty in urban studies. Students will also gain an introduction to their adopted home, Baltimore, by collecting data and conducting field observations in different neighborhoods.  
Instructor(s): M. Reese.

**AS.230.143. Global Migration: Refugees, Economic Migrants, and Borders. 3.0 Credits.**
This course introduces students to the different forms, catalysts, and consequences of global migration. Even as the plight of migrants and refugees has elicited the sympathy of millions worldwide, the majority of them still encounter closed borders and draconian immigration regimes on the fringes of more “desirable” destinations in Europe, Australia, and the United States, and many others remain in limbo in their countries of origin or in transit states. Are these border restrictions new? Or are they consistent with states’ long-standing ways of regulating who is and is not worthy of being admitted through their borders? Throughout the course, we will trace the divergent factors that prompt refugees and economic migrants to migrate, juxtaposing these with the responses of states, international treaties, and humanitarian organizations to their movement and arrival in host countries. Using a variety of written and verbal assignments, we will question the fundamental categories of migration: What is an economic migrant? What is a refugee? How are they different or similar? Whose interests do such categories serve, and how have they been used justify governmental practices of inclusion and exclusion over time?  
Instructor(s): I. Naveh Benjamin  
Area: Social and Behavioral Sciences  
Writing Intensive.

**AS.230.147. Introduction to Islam Since 1800. 3.0 Credits.**
This course is an introduction to contemporary Islam and Muslim societies from approximately 1800 to the present. Key themes will include the colonial encounter, state formation and reform, revolution, Islamic revival, and globalization. Reflecting Islam’s status as a world religion, the course will touch on developments around the Muslim-majority world and in the West.  
Instructor(s): R. Calder  
Area: Social and Behavioral Sciences.
AS.230.150. Issues in International Development. 3.0 Credits.
Why do billions of people continue to live in poverty? What obstacles stand in the way of secure and dignified lives for all? Who is most likely to bring about change, what strategies should they follow, and what kinds of institutions should they put in place? This course will introduce the main theoretical perspectives, debates, and themes in the field of international development since the mid-20th century. It has three sections. The first section focuses on debates over the optimal conditions and strategies for generating economic growth and on the relationship between growth, human welfare, and inequality. The second section presents critical assessments of development interventions from various perspectives. The third section considers the role of social movements in shaping development and social change in the 21st century.
Instructor(s): M. Levien
Area: Social and Behavioral Sciences.

AS.230.152. Housing and Schools: The Social Contexts of Inequality. 3.0 Credits.
Where families live is still a major determinant of the quality of children's schools, and this connection between residential location and educational opportunity plays a significant role in the perpetuation of social inequality. This course will examine recent research in housing and education to develop a critical understanding of the role of social inequality, public policy, and individual choices in shaping housing and school opportunities for families. The course will focus on the intersection of residential and educational choices, by examining housing and school interventions across a host of American cities, with a particular focus on how these issues operate in our own city of Baltimore at the end of the semester.
Instructor(s): A. Rhodes
Area: Social and Behavioral Sciences.

AS.230.154. Freshman Seminar: Gender, Health and Aging. 3.0 Credits.
In this course students will develop an understanding of the ways in which gender structures health and well being through adulthood and later life. The experience of sexual minorities and the intersection of gender with class and ethnicity will also be discussed. Students will be expected to participate actively and lead discussions on specific topics.
Instructor(s): E. Agree
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.166. Chinese Migration in Modern World History 1500's-2000's. 3.0 Credits.
This interdisciplinary course applies theories of economic sociology to examine the effects of Chinese overseas migration on modern world economy from the sixteenth century to the contemporary era. It examines the contribution of overseas Chinese to the development of capitalism in the following junctures: the East-West economic integration in the pre-modern era, China's modern transformation after the Opium War (1839-1842), the making of US national economy in the early twentieth century, as well as the postwar economic miracles in the Pacific Rim, among others. Special Note: Fulfills History requirement for GSCD track students.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.175. Chinese Revolutions. 3.0 Credits.
This course introduces the origins, operation and impacts of five major revolutions in modern China between 1850 and 1950. These include the Taiping Rebellion, the republican revolutions, federalist and southern automatic movements, labor strikes as well as peasant rebellions. It draws on the existing historiography that examines China's transition from an empire to a republic, impacts of western and Japanese influences to China, as well as the continuity and change of Chinese social organizations. Cross list with International Studies and East Asian Studies. Fulfills IS History requirement.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.195. Exploring Baltimore: An Introduction to Urban Studies. 3.0 Credits.
This course will introduce students to the field of urban studies and Baltimore itself. Students will learn data collection and analysis methods used in the social sciences. Students will discuss relevant research published in urban studies by Johns Hopkins faculty and other experts in the field. Students will also gain an introduction to their adopted home, Baltimore, by collecting data and conducting field observations in different neighborhoods.
Instructor(s): M. Reese
Area: Social and Behavioral Sciences.

The purpose of this course is to provide a sound introduction to the overall process of research and the specific research methods most frequently used by sociologists and other social scientists. Required for Sociology majors and IS GSCD track students.
Instructor(s): L. Hao
Area: Social and Behavioral Sciences.

AS.230.205. Introduction to Social Statistics. 4.0 Credits.
This course will introduce students to the application of statistical techniques commonly used in sociological analysis. Topics include measures of central tendency and dispersion, probability theory, confidence intervals, chi-square, anova, and regression analysis. Hands-on computer experience with statistical software and analysis of data from various fields of social research. Special Note: Required for IS GSCD track students.
Prerequisites: Statistics Sequence restriction: students who have completed any of these courses may not register: EN.550.211 OR EN.550.230 OR EN.550.310 OR EN.550.311 OR EN.550.413 OR EN.550.420 OR EN.550.420 OR EN.550.420 OR EN.560.435 OR AS.280.345 OR AS.200.314 OR AS.200.315 OR EN.560.348;Statistics Sequence Restriction: Students who have completed EN.550.111 OR EN.550.113 may not enroll.
Instructor(s): J. Grigg
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.230.213. Social Theory. 3.0 Credits.
This course will focus on three classical theorists whose ideas have greatly influenced the ways we study and understand society: Karl Marx, Max Weber, and Emile Durkheim. The course is devoted to understanding how each theorist understood the origin, structure and historical dynamics of modern societies. In addition to comparing their theories, we will apply them to current social issues.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.
AS.230.217. Chinese Overseas in Global History. 3.0 Credits.
This course examines the topics of Chinese overseas migration after the long sixteenth century. It investigates the following themes: First, the making of Chinese maritime frontier in the longterm trade and migration across the South China Sea and beyond; Second, economic functions of Chinese overseas networks in the East-West integration from the early modern era to the ongoing wave of globalization; Third, politics of identity and heritage in Chinese overseas communities. Course may not be taken by students that previously took AS.230.166.
Prerequisites: Course may not be taken by students that previously took AS.230.166.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.221. Global Social Change. 3.0 Credits.
This course introduces students to issues of global social change, with a particular focus on the challenges of international development and the contemporary globalization process. Specific themes include world income inequality and global poverty, the rise of supranational organizations (e.g. WTO and EU) and their relations with sovereign states, anti-globalization activism, the rise of China and India in the global economy, and the origins as well as consequences of the current global economic crisis, among others. Lectures will be aided by documentary films and other multi-media materials. Special Note: Fulfills Economics requirement for IS GSCD track students only. Formerly offered as AS.230.353. Students who took AS.230.353 cannot take AS.230.221.
Instructor(s): H. Hung
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.222. Land, Labor, Environmental Rights and Struggles in Contemporary Africa. 3.0 Credits.
The course examines the new wave of social protest and popular uprisings in contemporary Africa through the interconnected themes of land, labor and environmental struggles. Attention will be placed on the early 21st century.
Instructor(s): R. Jacobs
Area: Social and Behavioral Sciences.

AS.230.223. Housing and Homelessness in the United States. 3.0 Credits.
This course will examine the role of housing, or the absence thereof, in shaping quality of life. It will explore the consequences of the places in which we live and how we are housed. Consideration will be given to overcrowding, affordability, accessibility, and past and existing housing policies and their influence on society. Special attention will be given to the problem of homelessness.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.228. Colonialism in Asia and Its Contested Legacies. 3.0 Credits.
This course surveys the impacts of colonialism in East and Southeast Asia. Special attention will be paid to the social and economic development in British Singapore and Hong Kong as well as Japanese Korea and Taiwan. Topics include free-trade imperialism, colonial modernity, anticolonial movements, pan-Asianism, and post-war U.S. hegemony.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.237. Sociology and Film. 3.0 Credits.
Do films merely mirror society, or do they in fact shape societal experience? This class will investigate these questions through a filmic analysis of sociological issues. We will consider both narrative and documentary films and use them to engage in sociological questions of class, race, and gender. We will discuss what the historical and current trends in film making and film subject say about society, and how these trends may in turn influence society.
Instructor(s): E. Talbert
Area: Humanities, Social and Behavioral Sciences.

AS.230.244. Race and Ethnicity in American Society. 3.0 Credits.
Race and ethnicity have played a prominent role in American society and continue to do so, as demonstrated by interracial and interethnic gaps in economic and educational achievement, residence, political power, family structure, crime, and health. Using a sociological framework, we will explore the historical significance of race and its development as a social construction, assess the causes and consequences of intergroup inequalities and explore potential solutions.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.253. Social Interaction. 3.0 Credits.
Interaction in small groups or in face-to-face situations ("microsociology") is the sole focus of this course. Wherever possible, a “hands on” approach in which students do sociology and not just learn about others’ efforts is utilized. This will include field observations of public and semi-public spaces, recording and analyzing small group interaction, and participating in SIMSOC, an intense interactive simulation of society. Major conceptual approaches include symbolic interactionism, ethnomethodology and interaction ritual. Students that previously took AS.230.127 may not take this course.
Prerequisites: Students that previously took 230.127 may not take this course.
Instructor(s): T. Nelson
Area: Social and Behavioral Sciences.

AS.230.255. Men and Women in Society. 3.0 Credits.
This course will explore what it means to be male or female through academic writings, fiction, and film. It will examine how genders are defined by individuals, cultures, and institutions, and how those meanings shape everyday life for men and women. Power, inequality, and intersections with race-ethnicity, class, and sexuality will be a primary focus. Theories of gender addressed will include those related to masculinity, social psychology, feminism, and intersectionality. Though the course will primarily consider the United States, gender in other countries and cultures will also be addressed. Cross-listed with WGS.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences.

AS.230.265. Research Tools for Global Sociology and Development. 3.0 Credits.
This course will introduce students to a range of software programs that are critical for conducting social scientific research in the 21st century. Students will develop competency in the use of computer programs for statistical analysis, database management, the creation of maps and timelines, and the presentation of research reports. The course uses examples from ongoing social science faculty research projects at Johns Hopkins on global inequality and international development. Required for GSCD track students. Course previously titled "Research Tools and Technologies for the Social Sciences”
Instructor(s): M. Kang
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.
AS.230.275. Revolution, Reform and Social Inequality in China. 3.0 Credits.
This course explores various aspects of social inequality in China during the Mao Zedong and the post-Mao reform eras. We will examine inequality within villages, the rural/urban divide, urban inequality, education and health policies, and gender and ethnic inequality. Each of these issue areas will be tackled analytically, but the aim is also to understand what it was/is like to live in China during and after the Mao era. Formerly offered as AS.230.321.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.285. Maritime East Asia. 3.0 Credits.
This course examines the transnational connections among merchants and migrants in the waters of East and Southeast Asia from a historical and comparative perspective. We will explore how diplomatic ties, long-distance trade and migration contributed to the making of cosmopolitan cities such as Quanzhou (Zayton), Malacca, Fort Zeelandia (Formosa), Batavia, Manila, Singapore and Hong Kong in the region from the tenth century onwards. The course will close with an examination of how the transnational connections are relevant to understand interstate competition in Asia's long twentieth century. Key subjects to be introduced include tribute trade system, trading diasporas, Euro-Chinese co-colonialism, pan-Asianism, as well as history and historiography of maritime silk road.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.293. Immigration in the United States. 3.0 Credits.
This course examines patterns and consequences of immigration at the national, state, and local level. Special attention will be given to changing racial and ethnic relations in American gateway cities, immigrants’ economic and cultural assimilation, the plight of the second generation, the importance of immigration policy in shaping the experiences of migrant groups, and public opinion on immigration.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.310. Becoming An Adult. 3.0 Credits.
While students may already be personally familiar with the subject matter, the course examines the sociological and psychological dimensions of this demographically dense period known as the transition to adulthood. Emphasizes life course theories of human development through readings of empirical work on adolescence, the transition to college, early employment and early family formation. Attention is paid to the ways class; gender; race and nationality influence the pathways, choices and outcomes of young people. A Statistics/ Sociology background is helpful, but not required.
Instructor(s): S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.312. Education & Society. 3.0 Credits.
This course analyzes educational systems as social institutions and organizations. It gives particular attention to the often taken-for-granted ways that we structure learning in schools and their consequences for social inequality. To these ends, the course will examine classical institutional and organizational theory in sociology and evaluate these theories in their application to historical process of educational formation and the contemporary organization of K-12 schooling in the US.
Instructor(s): J. Burdick-Will
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.313. Space, Place, Poverty & Race: Sociological Perspectives on Neighborhoods & Public Housing. 3.0 Credits.
Is a neighborhood just a grouping of individuals living in the same place, or do neighborhoods have collective meanings and impacts on children and families? We will capitalize on research methodologies used to define and describe neighborhoods and their effects on economic and educational outcomes. These include case studies, census data, surveys, quasi/experimental data. Focus is on how research measures neighborhood effects and incorporates community level processes into models of social causation (e.g., social capital/control, community efficacy, civic engagement). Also examined: patterns in residential mobility, segregation, and preferences within black and white populations; development of housing policy in the U.S.; programs to determine how neighborhoods affect issues of social importance. Statistics and public policy background is helpful but not required.
Instructor(s): S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.316. African American Family. 3.0 Credits.
This course is an examination of sociological theories and studies of African-American families and an overview of the major issues confronting African-American family life. The contemporary conditions of black families are explored, as well as the historical events that have influenced the family patterns we currently observe. Special attention will be given to social policies that have evolved as a result of the prominence of any one perspective at a given point in time.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences.

AS.230.318. State and Society in Modern India. 3.0 Credits.
This course examines the complex, at times conflicting, relationship that has emerged between Indian seats of power from above and Indian expressions of society from below. Attention will be placed on the period between 1947 to the present.
Instructor(s): R. Agarwala
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.322. Quantitative Research Practicum. 3.0 Credits.
This course provides “hands on” research experience applying sociological research tools and a sociological perspective to problems of substance. Quantitative methods will be emphasized, as applied to census data, survey data and/or archival data. Students will design and carry out a research project and write a research report. Juniors and seniors only. Sophomores require instructor’s permission. Recommended Course Background: AS.230.205, AS.230.202
Instructor(s): J. Burdick-Will
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences
Writing Intensive.
AS.230.323. Qualitative Research Practicum. 3.0 Credits.
This course provides "hands on" research experience applying sociological research tools and a sociological perspective to problems of substance. Qualitative observational and/or interviewing methods will be emphasized. Students will design and carry out a research project and write a research report. This course fulfills the "research practicum" requirement for the Sociology major.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.324. Gender and International Development. 3.0 Credits.
This course employs a comparative perspective to examine the gendered impact of international development experiences and policies. Students will discuss the historical evolution of how the concept of gender has been constructed, conceptualized, and integrated into international development theory and practice. The course will also examine how greater international development. In particular, we will examine structural theories of poverty reduction, individual theories of power and processes of stratification at the household and family level. Specific issue areas will include the globalization, class and work political participation and social movements. Cross-listed with International Studies (CF; IR). Fulfills Economics requirement for IS GSCD track students only.
Instructor(s): R. Agarwala
Area: Social and Behavioral Sciences.

AS.230.325. Global Social Change and Development Practicum. 3.0 Credits.
This course provides "hands on" research experience in the field of global social change and development. Students will participate in a collaborative research project analyzing the causes and consequences of the recent upsurge of protest around the world in comparison with previous historical waves of social unrest. The course fulfills the "research practicum" requirement for Sociology majors and is required for the GSCD track.
Prerequisites: AS.230.265 or permission of instructor.
Instructor(s): B. Silver; S. Karatasli
Area: Social and Behavioral Sciences.

AS.230.326. Race, Racism & Racial Privilege. 3.0 Credits.
This course will examine the concepts of race, racism, racial privilege in contemporary America, and the West in general. Examples from other countries will be integrated as well. Historical contexts such as the colonialism, the Civil War and Reconstruction, the Civil Rights movement, and the post Civil Rights era will help to provide an understanding of the social, political, economic, and cultural forces processes that have constructed and shaped the concepts of race and the racialized subject over time.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.327. Medical Humanitarianism. 3.0 Credits.
Humanitarian organizations play life-preserving roles in global conflicts, and have front-row views of disasters ranging from the 2010 Haiti earthquake to the 2011 Fukushima tsunami in Japan. Yet even while they provide vital assistance to millions of people in crisis, such organizations are beset by important paradoxes that hinder their capacity to create sustainable interventions. They work to fill long-lasting needs, but are prone to moving quickly from one site to the next in search of the latest emergency. They strive to be apolitical, yet are invariably influenced by the geopolitical agendas of global powers. How do such contradictions arise, and what is their impact upon millions of aid recipients around the world? Drawing on case studies from South Sudan to Haiti, this course addresses these contradictions by exploring how and why medical aid organizations attempt, and sometimes fail, to reconcile short-term goals, such as immediate life-saving, with long-term missions, such as public health programs and conflict resolution initiatives.
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.328. Family, Gender and Sexuality in China. 3.0 Credits.
This course examines social changes in China since the beginning of the People's Republic (1949) through the lenses of family, gender and sexuality. The first half of the course focuses on understanding family institutions, women's status, gender relations and sexualities in connection with major historical transitions between 1949 and the present. The second half includes readings and discussions around several thematic topics regarding family, gender and sexuality in contemporary China in the broader context of politics, economy, and social norms.
Instructor(s): Y. Dong
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.329. Sociology of Health and Illness. 3.0 Credits.
This course introduces students to core concepts that define the sociological approach to health, illness and health care. Topics include: health disparities, social context of health and illness, and the Sociology of Medicine.
Instructor(s): E. Agree
Area: Social and Behavioral Sciences.

AS.230.330. Political Sociology of Latin America. 3.0 Credits.
This course provides an overview of Latin America through its historical, economic, social, and political dimensions. Emphasis will be given to the analysis of social structures: class, race and ethnicity, and the contemporary social movements. The course begins with an overview of the pre-Columbian civilizations and colonial legacies that gave rise to the multiethnic societies and the ethnic conflicts which characterize contemporary Latin America.Cross-listed with Program in Latin American Studies and International Studies (CP)
Instructor(s): M. von der Heydt-Coca
Area: Social and Behavioral Sciences.

AS.230.331. Rising Inequality in Rich Countries. 3.0 Credits.
This course examines explanations for why inequality has increased in North America and Western Europe over the last 40 years. The course focuses on macro-level economic and political changes. Topics include deindustrialization, globalization, financial sector growth, welfare program cuts, and decreasing tax progressivity.
Instructor(s): D. Thompson
Area: Social and Behavioral Sciences.
AS.230.346. Economic Sociology of Latin America. 3.0 Credits.
This course will offer an overview of Latin America’s economic reality as an intertwined process of economic and political domestic factors within the constraints of the world economy. Latin American development will be analyzed from a historical perspective. The first half of the semester the course will focus on the analysis of the economic developmental patterns starting in the middle of the 19th century to the populist era in the middle of the 20th century. In the second half of the semester, we will analyze in depth the contemporary neoliberal approach to development. Globalization is the force that drives economic, social and political processes in Latin America. The course will include case studies as well the social conflicts generated by the increasing polarization of the society. Students will be exposed to important sociological theories. Instructor(s): M. von der Heydt-Coca
Area: Social and Behavioral Sciences.

AS.230.351. Capitalism, Development and Resistance in South Korea. 3.0 Credits.
This course examines the trajectory of capitalist development in South Korea (hereafter, Korea) in the twentieth and the early twenty-first centuries. We will examine debates around the political economy of development in Korea as well as class formation and social and labor protest. This course is designed to help students explore the dynamics of capitalist development and workers’ movements in Korea as a case of late development in the global South. The course also draws on theoretical perspectives and methodological tools from comparative and world-historical sociology to better understand the Korean case. Instructor(s): M. Kang
Area: Social and Behavioral Sciences.

AS.230.352. Chinese Diaspora: Networks and Identity. 3.0 Credits.
This course combines lecture and class discussion. It examines the history and historiography of Chinese overseas migration. Major issues include overseas Chinese as “merchants without empire,” Chinese exclusion acts in the age of mass migration, the “Chinese question” in postcolonial Southeast Asia, as well as the making and unmaking of Chinese identity in the current wave of globalization. Prerequisites: Students may not have completed AS.230.217 previously.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.355. Homelessness, Vacants and the Right to Housing. 3.0 Credits.
A Community Based Learning (CBL) course organized through the Center for Social Concern, we will collaborate with Housing Our Neighbors (HON) http://www.honbaltimore.org, a local organization comprised of people experiencing homelessness, allies and advocates promoting the human right to housing to examine and engage the vacant housing crisis in Baltimore. Students will be expected to participate in organizing and community sessions as well as ongoing research into the Baltimore vacant property market and ultimately seek to transform housing into a right for all people. Instructor(s): D. Pasciuti
Area: Social and Behavioral Sciences.

AS.230.357. Baltimore and Beyond. 3.0 Credits.
This course uses the city of Baltimore as a lens through which to explore issues of urban inequality. We will focus on Baltimore’s history of racial segregation and concentrated poverty, and its effect on the social and economic well-being of the city and its residents, with attention to education, employment, health and crime. Students will learn how to employ Census data, GIS approaches, and sociological research to inform questions about population change, inequality and the distribution of resources across the city and metropolitan region. Students will also work on one or more policy relevant studies based in Baltimore, including: a project on abandoned and vacant housing, a desegregation intervention, and a longitudinal study of inner city youth. Finally, students will become familiar with Baltimore City’s programs and policy approaches to addressing the city’s most pressing problems, and will design innovative and effective and innovative solutions as part of their course assignments. Enrollment restricted to Social Policy minors only.
Prerequisites: Students that took AS.360.357 may not take AS.230.357
Instructor(s): S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.358. The Politics of Mental Health. 3.0 Credits.
This course examines how the psy disciplines – psychology, psychiatry, psychotherapy and related fields – create knowledge about the mind, and how these fields have in turn shaped political and social life since early 20th century. We will explore how the psy disciplines have proven useful to projects of state building by reconstructing the human mind as a calculable, quantifiable entity, one that can be measured and governed across diverse educational, military, and healthcare settings. We will then ask how psychiatric categories such as bipolar disorder and PTSD (post-traumatic stress disorder) were created, and consider their impact on both the legal/medical management of illness and on lay and expert notions of sanity and normality. Finally, we will examine the rising influence of humanitarian mental health interventions, and immerse ourselves in the debates they have engendered concerning the use of psychotherapy to alleviate suffering in war and disaster zones. Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.
AS.230.359. Research Seminar on Global Social Protest. 3.0 Credits.

This research seminar will be run as a collective research working group in which we will carry out a research project on the waves of social unrest around the world from the 19th century to the present. The research project seeks to shed light on the recent (post-2008) global upsurge of labor and social unrest – from the Arab Spring to Occupy Wall Street, from the anti-austerity movements roiling Europe to the wave of workers’ protests taking place in China (including the factories where Ipods, Ipad and Iphones are assembled) – by comparing it with analogous historical periods since the early nineteenth century. We will document the spread and characteristics of this global wave as well as exploring its causes and consequences. The course will be devoted to the (i) theoretical discussions about major historical waves of social protest and labor unrest in the world, (ii) methodological discussions regarding data collection procedures using digital archives of historical newspapers (including reliability studies), (iii) data-coding, and (iv) substantive analysis of major waves of social protest. This course is suitable for students who are interested in deepening their understanding of the dynamics of global social protest as well as in deepening their experience with hands-on research on a topic of contemporary social and political relevance.

Prerequisites: AS.230.265 OR AS.230.325 OR permission of the instructor.
Instructor(s): S. Kumral
Area: Social and Behavioral Sciences.

AS.230.361. Class and Culture. 3.0 Credits.

This course examines the intersection of social class and culture – both the popular culture of movies, TV, music, etc., and "culture" in the anthropological sense as the shared way of life of a people. The course is divided into three main sections: 1) concepts of class, culture and the ways in which they interact; 2) cultures of each major class within American society, beginning with the "Old" and "New Money" classes, the "New Class" of intelligentsia, the much-invoked Middle Classes, the shrinking Working Class, and continuing through the poverty-stricken Lower Classes; 3) issues of cultural consumption and production and their role in reproducing the class structure.
Instructor(s): T. Nelson
Area: Social and Behavioral Sciences.

AS.230.362. Migration & Development. 3.0 Credits.

This course focuses on the relationship between international migration and development. The course first introduces theories of international migration, immigrant integration, and international development. Building on this foundation, we then examine how immigrants interact with their homeland and how sending country governments tap their diaspora to improve development outcomes. Cross-listed with International Studies (CP, IR). Fulfills Economics requirement for IS GSCD track students only.
Instructor(s): L. Hao; R. Agarwala
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.363. Sociology of Dispossession. 3.0 Credits.

The "grabbing" of land and natural resources has, in recent years, generated widespread political conflict across the world and put dispossession on the agenda of academics and policy-makers. Nevertheless, compared to other social relations of power, land dispossession has not been central to scholarly or public understandings of capitalism, the state, development, or politics. In this class, we will collectively explore the nascent field that we might call the sociology of dispossession. We will examine existing theories of dispossession, and proceed to challenge, reconstruct or supplant those theories as we consider a wide range of historical examples of dispossession from the English Enclosures and colonial plunder to contemporary urban redevelopment and rural land grabs. This is a reading- and writing-intensive seminar.
Instructor(s): M. Levien
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.364. Ethnic Violence in Comparative and Global Perspective. 3.0 Credits.

This course provides a framework for understanding and analyzing different forms of ethnic violence including ethnic riots, ethnic wars, and genocides around the world. Beginning with foundational texts on defining ethnic groups, we will examine causes and dynamics of ethnic mobilization and violence from different disciplines and perspectives. Throughout the course, we will explore texts that treat key themes in studies of ethnic violence including globalization, economic development, inequality, dismantling of the developmental state, migration, state formation and failure, conflict resolution, and democratization; focusing on various cases of ethnic violence in different regions including Eastern Europe, Basque Region, Turkey, Sudan, India, Sri Lanka, China, and historical cases like Northern Ireland. Fulfills Non-Western History (NWHIST) requirement for IS GSCD students only.
Instructor(s): S. Kumral
Area: Social and Behavioral Sciences.

AS.230.367. Islamic Finance. 3.0 Credits.

Today, Islamic finance is a global industry comprising nearly $2 trillion in assets, with hubs from Kuala Lumpur to Dubai to London. But half a century ago, nothing called "Islamic finance" existed. So where did Islamic finance come from? Why is it growing so fast? And what does it mean for finance to be Islamic? We discuss the ban on riba in the Quran and hadith, finance in early and medieval Islamic societies, petrodollars and the birth of Islamic banking in the 1970s, the rise of Islamic capital markets since 2000, contemporary shariah-compliant financial structures, and the constitution of piety through financial practice.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences.

AS.230.369. Sociology in Economic Life. 3.0 Credits.

This course discusses how geopolitics, technology as well as social differentiation (such as race, class and gender) shape the structure of economic actions. Special attention will be paid to patterns of state-business relationship, labor processes, migrant economy, globalization and international division of labor.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.
AS.230.370. Housing and Homelessness in the United States. 3.0 Credits.
This course will examine the role of housing, or the absence thereof, in shaping quality of life. It will explore the consequences of the places in which we live and how we are housed. Consideration will be given to overcrowding, affordability, accessibility, and past and existing housing policies and their influence on society. Special attention will be given to the problem of homelessness.
Prerequisites: Students may not have previously taken AS.230.223.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.371. Sociology of Rock. 3.0 Credits.
This course examines the history and dynamics of rock music using key concepts and perspectives from sociology. The course is divided into four sections, each of which examines the phenomenon of rock music from a different analytical perspective. The first section on the origins of rock looks at the confluence of developments in post-war America, especially in terms of race, class and generational change, which produced this new musical form. The second section, “Rock as Cultural Production,” looks at all aspects of the rock “field,” not just artists and audiences but record labels, stores, DJs and radio stations, the music press and journalists, and concert venues. The third section examines rock as a force for social change and protest from the 1960s until present, and the final section examines the performative aspects of rock as a kind of “interaction ritual” with its own microsociological dynamics.
Instructor(s): T. Nelson
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.373. Urban Sociology. 3.0 Credits.
This course will explore the growth and development of urban areas, and how cities create, influence, and perpetuate social and economic inequalities. It will explore how the community environment shapes social interactions, identities, and attitudes. Specific topics will include urban poverty, residential segregation, housing, crime, and health.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences

AS.230.374. Poverty and Public Policy. 3.0 Credits.
This course examines the causes and consequences of U.S. urban poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations scholars have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Enrollment restricted to Social Policy minors only.
Prerequisites: Students that took AS.360.372 may not take AS.230.374.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.375. Nations, States, and Boundaries. 3.0 Credits.
This course explores the historical origins and development of the modern global political order based on sovereign nation-states, the crisis of this order through the twentieth century, as well as the unraveling of this order at the turn of the twenty-first century. We will focus on how dominant political organizations in the changing world order (such as states, political parties, and transnational governing bodies) have been shaped by different social forces (such as classes and ethnic groups) and vice versa. Topics covered include rise and fall of modern nationalism, formation of regional and global governing structures, “civilizational” turn of global politics, waves of separatism and redefining of nations’ boundaries after the Cold War, politics of immigration and citizenship, among others.
Instructor(s): H. Kuo
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.377. Colonialism and Anti-Colonialism. 3.0 Credits.
This seminar examines the theories and historiography of colonialism and anti-colonial movements. It focuses on the establishment of the colonial division of labor, comparative colonialism, identity formation, and nationalism as well as anti-colonial movement.
Instructor(s): H. Hung
Area: Social and Behavioral Sciences
AS.230.380. Poverty and Social Welfare Policy. 3.0 Credits.
This course examines the causes and consequences of U.S. poverty and explores strategies for addressing it, with some comparisons to other rich nations. We cover the major theoretical explanations scholars have advanced to explain the persistence of poverty and inequality including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to contemporary policy approaches aimed at alleviating poverty, and evaluations of these approaches.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.381. Sociology of the Middle East and North Africa. 3.0 Credits.
This course takes a sociological approach to the contemporary Middle East and North Africa. Topics include urbanization and demographic change; rentier welfare states and the global political economy of oil; women in higher education and the labor force; the 2011 Arab Spring; conflict in Syria, Libya, and Yemen; Amazigh (Berber) identity in northwest Africa; Israel-Palestine; “Dubai, Inc.” and the sociology of migrant labor; neoliberal Islamic politics in Turkey; cinema and everyday life in Iran; conservative monarchy in Morocco and Saudi Arabia; and the role of the United States in the MENA region. Students will give presentations, write memos, and submit two papers. One aim of the course is to turn students into clear, polished academic writers and thinkers.
Instructor(s): R. Calder
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.382. Revolution, Reform and Resistance: India in World Historical Perspective. 3.0 Credits.
This course examines periods of revolutionary upheavals, reforms, and different forms of resistance in India during the 20th century and analyzes their world-historical implications.
Instructor(s): S. Upadhyay
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.383. Courts, Housing, and the City: A Research Seminar on Social Justice in Baltimore. 3.0 Credits.
This course will join an existing survey of the Housing Court in Baltimore City by the Public Justice Center (PJC) of Maryland to examine the role and process of evictions in the Baltimore civil litigation system. The course will examine the history of housing in Baltimore and the changing role of the courts in housing rights and law from the mid-20th century to the present. Working with the PJC’s Human Right to Housing Project, students will be expected to participate in the survey collection process by attending Rent Court and participating in the data collection process, followed by cleaning and analysis of the data. Counts as American Politics/Sociology of the United States for GSCD Track.
Prerequisites: AS.230.205 AND AS.230.265 or permission of instructor
Instructor(s): D. Pasciuti
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

AS.230.385. Schooling, Racial Inequality and Public Policy in America. 3.0 Credits.
After examining alternative explanations for why individuals obtain different amounts and types of educational training, the course focuses on how an individual's family background and race affect his or her trajectory through the educational system. The course covers the specific challenges that have confronted urban schooling in America since the 1960s, including the classic literature on the effects of school and community resources on student achievement as well as the development and later evaluation of school desegregation policies. The course also considers case studies of current policy debates in the US, such as housing segregation and school resegregation, voucher programs for school choice, and the motivation for and consequences of the establishment of state-mandated testing requirements. Throughout the course, emphasis is placed upon the alternative modes of inquiry and writing which opposing scholars, policymakers, and journalists use to address these contentious topics.
Instructor(s): S. Morgan
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.388. Sociology of the Family. 3.0 Credits.
Sociological perspectives on contemporary family life, including marriage and divorce, cohabitation, single parenthood, same sex partnerships, children's wellbeing, balancing work and family responsibilities, domestic violence, and government policy toward families.
Instructor(s): A. Cherlin
Area: Social and Behavioral Sciences.

AS.230.393. Global Health and Human Rights. 3.0 Credits.
Is access to healthcare a fundamental human right? If so, then which global actors are obligated to provide healthcare to whom, and for how long? How do meanings of health and illness vary across time and place? And finally, how are human rights principles translated into frontline practice in order to promote well-being? This course takes a critical interdisciplinary approach to these questions through a series of global case studies ranging from humanitarian aid in post-tsunami Sri Lanka to anti-FGM (female genital mutilation) campaigns in Ghana. How do international NGOs, UN bodies, and governments collaborate (or compete) to distribute healthcare in places beset by dire resource shortages? Do human rights principles carry legal weight across borders, and if so, could access to healthcare services and essential medicines be litigated in order to compel governments to provide it? And finally, what cultural assumptions do human rights discourses carry with them, and what happens if rights-based approaches are poorly received by recipient populations? Moving beyond the basic principle of healthcare as a human right, this course aims to bring this idea's history and politics into focus by offering an in-depth exploration of its ethics and implementation.
Instructor(s): I. Naveh Benjamin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.394. Social Statistics. 4.0 Credits.
The application of statistical techniques commonly used in sociological analysis. Topics include measures of central tendency and dispersion, probability theory, confidence intervals, chi-square, anova, and regression analysis. Hands-on computer experience with statistical software and analysis of data from various fields of social research.
Instructor(s): J. Grigg
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.
AS.230.395. Contemporary Social Theory. 3.0 Credits.
This course will examine how major social theorists of the 20th century advanced upon the “classical” social theories of Marx, Weber, and Durkheim. As they grappled with the historical events and social concerns of the 20th century—the Russian revolution and its degeneration into Stalinism, the failure of communist movements in the West, the rise and fall of fascism and Nazism, the consolidation of capitalist democracies and welfare states, the emergence of anti-colonial movements in the “Third World,” and the persistence of race, gender and sexuality as forms of domination—social theorists provided novel answers to classical questions of social theory: 1) what is the structure of modern society, how does it change, and how is it reproduced?; 2) what is the relation between social structures and ideas, knowledge, and subjectivity?; and 3) what are the conditions of possibility for human freedom? Theorists to be covered include Antonio Gramsci, Franz Fanon, W.E.B. DuBois, Georg Lukacs, Talcott Parsons, Herbert Marcuse, Jurgen Habermas, Louis Althusser, Pierre Bourdieu, Michel Foucault, Nancy Fraser, Patricia Hill Collins, Judith Butler, and Henri Lefebvre. In addition to understanding and comparing the theories, we will try to use them to understand contemporary societies.
Instructor(s): M. Levien
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.396. Politics and Society. 3.0 Credits.
This seminar surveys texts that treat key problems of political sociology including the rise of the modern state, the relationship between political and economic power, the origins and nature of liberal democracy, the nation-state and nationalism, states and war, states and welfare, sources of authority, ideology and political contention, social movements, and social revolutions. Fulfills Comparative Politics for International Studies.
Prerequisites: AS.230.213 or permission of instructor.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.397. The Political Economy of Drugs and Drug Wars. 3.0 Credits.
In the United States, we spend more than $100 billion annually on illegal drugs—and the government spends more than $50 billion a year to combat their sale and use. These statistics raise important and complicated social questions. This course will examine the production, sale, use, and control of illegal drugs from a historical and sociological perspective. We will have three objectives: to understand the social construction of drug use and illegality in the United States and other rich countries; to uncover the political and economic consequences of drug trafficking in those countries that produce drugs, particularly in Latin America; and to examine the political economy of drug control through the so-called War on Drugs, both domestically and internationally.
Instructor(s): C. Thornton
Area: Social and Behavioral Sciences.

AS.230.398. In Our Backyard: Housing and Community Change in Baltimore. 3.0 Credits.
This course will focus on how and why urban neighborhoods change. Why does vacant housing grow in some communities, while others seem on the brink of gentrification? Who benefits from neighborhood investment in Baltimore? Can urban revitalization benefit all residents? How can we study these challenging issues? These concerns are as relevant as they have ever been, as Baltimore contends with life after the death of Freddie Gray, contentious investment plans with major developers, and stubborn levels of poverty and crime. In this course, we will read scholarship in urban sociology, economics and housing policy data. A significant portion of the course will be dedicated to the analysis of longitudinal data on neighborhood change in the areas around both of Hopkins’ campuses, as well as other communities in the city. The data includes the perspectives of residents, landlords, developers, and community leaders, as well as ground-level observations of street and housing conditions. The course provides students an opportunity to become involved in timely and relevant research in the city, and possibly produce papers that would be suitable for conference submission, senior theses, and writing samples for graduate school. We will also compare efforts in Baltimore to those elsewhere, such as Detroit, Chicago, Brooklyn, Washington, D.C. Previous coursework in statistics and research methods is helpful but not required.
Instructor(s): S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.405. Neoliberalism. 3.0 Credits.
Neoliberalism, a political project that seeks to subject all aspects of social life to free market force, has ascended to orthodoxy in developed and developing countries alike over the last four decades. This course is a reading seminar focused on some of the key classic and cutting-edge original texts that critically examine and debate the origins, socio-political impacts, and crisis of the neoliberal project. It will cover such topics as the genealogy of the neoliberal idea, neoliberal state, informalization of works, neoliberal cities, rise of the one percent, and global governance. Class will be a mix of lecture and seminar-style discussions. Requirements include reading memo, class presentation, and a term paper.
Instructor(s): H. Hung
Area: Social and Behavioral Sciences.

AS.230.407. Comparative Labor Movements Research Seminar. 3.0 Credits.
Research-oriented course on the dynamics of labor and social movements from global and comparative-historical perspective.
Prerequisites: AS.230.265 AND AS.230.325
Instructor(s): S. Karatasli
Area: Social and Behavioral Sciences.

AS.230.415. Social Problems in Contemporary China. 3.0 Credits.
In this course we will examine contemporary Chinese society, looking at economic development, rural transformation, urbanization and migration, labor relations, changes in class structure and family organization, health care, environmental problems, governance, and popular protest. The course is designed for both graduate and undergraduate students. Undergraduates must have already completed a course about China at Hopkins. Cross-listed with East Asian Studies.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences
Writing Intensive.
This course addresses the origins, global impacts, and demise of China's economic ascendancy as a world economic and political powerhouse at the turn of the twenty-first century. The course will cover the historical origins of the China boom and impacts of the boom on global political economic order. It will also address the social-political imbalances within China that contribute to the global financial crisis and recent slowdown of the Chinese economy. Particular topics include late imperial and Maoist legacies' relation to contemporary economic growth, stages of China's capitalist development, China's outward investment in the developing world, formation and limits of US-China economic symbiosis, and China's participation in global governance, among others.

Instructor(s): R. Calder
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.440. Port Cities and Historical Capitalism in Maritime Asia. 3.0 Credits.

The goal of the seminar is to examine the prospects and limits of understanding the incorporation of Asia in the capitalist world-system from the prism of oceanic connections. The theoretical thrust of this course is to develop but also to adapt Janet Abu-Lughod emphasis on the connections across port cities and littoral in the Afro-Eurasian continents before the long sixteenth century in her Before European Hegemony. But instead of looking at a port city as its adjacent hinterland polity’s gateway to global trade in the premodern era, the course examines the multifarious coast-hinterland relationships. The readings are organized by a chronological order, which begins with the historical maritime silk road between the third and thirteenth centuries, and will be followed by Asian port cities in the European age of empire and postwar American-led Cold War Structure, as well as the present-day Chinese New Silk Road Diplomacy. Students are expected to select an issue of regional tensions and to analyze its historical root.

Instructor(s): H. Kuo
Area: Social and Behavioral Sciences.

AS.230.445. Sociology of Religion. 3.0 Credits.

This seminar tackles major issues in the classical and contemporary sociology of religion. We begin with Ibn Khaldun, Friedrich Nietzsche, Karl Marx, Max Weber, Émile Durkheim, and Mary Douglas, asking basic questions: What are religion and the sacred? Why do they exist? What is the relationship between religion and social structure? And what role does religion play in morality, solidarity, boundaries, exploitation, patriarchy, and macrohistorical transformations such as the rise of capitalism? Keeping this theoretical grounding (and its flaws and biases) in mind, we continue to probe the problem of religion in modernity through more-recent writings. Topics include the secularization debate (Are modernity and religion antithetical?); "religious markets" and rational-choice theories of religion; religious revivalism, evangelicalism, fundamentalism, and proselytizing movements; feminist and queer sociologies of religion; civil religion (Is standing for the national anthem a religious act?); embodiment and prayer; Orientalism and postcolonial interrogations of the secular; religious violence and nationalism; the intersectionality of religion with race, class, and caste; and religion and neoliberalism. Although dominant sociologies of religion have focused on Christianity in Western Europe and North America, this course applies a global lens, training significant focus on non-Western and non-Christian contexts.

Instructor(s): R. Calder
Area: Social and Behavioral Sciences
Writing Intensive.
AS.230.602. Theories of Society.
This course will focus on three classical theorists whose ideas have fundamentally influenced the ways we study and understand society: Karl Marx, Max Weber, and Emile Durkheim. In the section on Marx, we will also read contributions by his close collaborator, Frederick Engels.
Instructor(s): J. Andreas.

AS.230.603. Contemporary Social Theory.
This course will examine how important schools of social theory challenged and reconstructed the "classical" theories of Marx, Weber, andDurkheim as they grappled with the historical developments and social concerns of the 20th and early 21st centuries.
Instructor(s): M. Levien.

A seminar in multiple regression (least squares and alternative estimation procedures) with a focus on sociological problems and software applications. Extensions to hierarchical linear models will be included. Graduate students should have completed AS.230.600 or the equivalent. Undergraduates only admitted with instructor’s permission, and AS.230.205 or equivalent. Recommended Course Background: AS.230.205, AS.230.600 or equivalent.
Instructor(s): J. Burdick-Will.

AS.230.605. Categorical Data Analysis.
This course provides the students with a set of statistical tools to understand and interpret social science research dealing with categorical dependent variables and to prepare students to apply these models in their own research. The models covered in the course include logit, probit, Poisson, and log-linear models, as well as multi-level models of categorical dependent variables.
Instructor(s): L. Hao
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

This is an intensive reading seminar on working class formation from a comparative, historical and global perspective, including theoretical and empirical (case study) readings on changes over time in labor process, labor markets, and labor movements. We will build on a range of local case studies to establish spatial and temporal patterns, and discuss the connections between these global patterns and the dynamics of historical capitalism.
Instructor(s): B. Silver.

AS.230.608. Proseminar In Sociology.
Individual one-hour presentations by faculty members will introduce students to the faculty’s substantive interests and research styles.
Instructor(s): A. Cherlin.

Advanced seminar for PhD students who are preparing their dissertation proposals or writing their dissertations. Sociology graduate students only.
Instructor(s): H. Hung.

AS.230.611. Seminar on Comparative & World-Historical Sociology.
In this seminar we will read key texts in comparative sociology. The topics covered are cross-national sociology, comparative national development, comparing world-systems, the modern world-system, globalization, and social movements.
Instructor(s): H. Hung.

AS.230.612. Seminar on Social Inequality.
This seminar attempts a broad survey of sociological theorizing and research on social stratification in the United States and the role of social institutions in generating and mitigating inequality.
Instructor(s): S. Deluca.

A discussion-oriented seminar focused on major recent writings on the family, in both the developed and developing nations.
Instructor(s): A. Cherlin.

Instructor(s): L. Hao.

In-depth reading and discussion of theories and research on immigration to the U.S. theoretical issues include international migration, immigration, and assimilation. Research topics include: the impact of U.S. immigration laws on immigrant inflows and stocks, self-selection of immigrants, the impact of immigration on the native-born population, and the adaptation of the first and second generations. The course focuses on immigration since 1965 and its related controversies and debates.
Instructor(s): L. Hao.

This course introduces strategies for estimating causal effects from a counterfactual perspective, uniting the potential outcome model with causal graph methodology. After an examination of the primary features of the counterfactual perspective and criteria for causal effect identification, the course focuses on developing a deep understanding of data analysis techniques that can work in favorable circumstances, such as matching, regression from a potential outcome perspective, and inverse probability of treatment weighting. The course concludes with the vexing challenges posed by unobserved determinants of both the cause and outcome of interest, and it provides a review of specialized designs that can salvage a research project in these situations.
Instructor(s): S. Morgan.

AS.230.635. PGSC Research Seminar.
Working seminar focusing on new research in the field of comparative and world-historical sociology. Sociology graduate students or permission of instructor.
Instructor(s): B. Silver.

AS.230.641. Urban Youth and Inequality.
Popular television shows and news media cast stark images of urban youth that range widely from notorious "corner boys" and controversial teen moms, to the celebrated examples of those writers, athletes and artists who beat the impossible odds of their backgrounds. This course takes a more systematic look at this population, with a sociological focus on the demography and social processes that characterize the transition to adulthood for disadvantaged youth growing up in America's cities. We will also examine the role of family, neighborhood, schools and peers in affecting the transition from high school to work and college, early family formation, and participation in risky behavior. Previous and contemporary policy approaches to addressing inequality among these young adults will also be explored.
Instructor(s): S. Deluca.
An intensive analysis of a wide range of sociological studies, designed to acquaint the student with how sociologists deal with important theoretical issues, using a variety of methods and sources of data. Particular attention will be paid to the logical coherence of the studies and to the fit between data and interpretation.
Instructor(s): H. Hung
Area: Social and Behavioral Sciences.

AS.230.644. Reading Capital @150.
Instructor(s): B. Silver; C. Thornton
Area: Social and Behavioral Sciences.

AS.230.647. Agrarian Change.
This course will explore questions related to historical and contemporary trajectories of agrarian change. It begins with classical theoretical debates on the distinctiveness of peasantries and their prospects under capitalism. It will then turn to major themes of agrarian change in the twentieth century: modes of production, class polarization and differentiation, peasant wars, moral economies, everyday resistance, collectivization and decollectivization, food regimes, and depeasantization. It will conclude with new themes in agrarian change, with a particular emphasis on contemporary forms of land dispossession and repossession. The course will be structured as a reading-intensive research seminar.
Instructor(s): M. Levien.

AS.230.649. Qualitative Research Methods: Domestic and International Fieldwork.
This course discusses the conceptualization of qualitative research involving fieldwork, and the collecting, analyzing, and reporting of sociological field data in both domestic and international settings. Data collection techniques such as intensive interviewing, participant-observation, document analysis, and ethnography are included. The course also covers the logic of qualitative inquiry, choosing research sites and cases, engaging archival sources, judging the validity and reliability of data, and software-based data analysis.
Instructor(s): K. McDonald; R. Calder
Area: Social and Behavioral Sciences.

AS.230.650. Macro-Comparative Research.
The course examines methods of studying long-term, large-scale social change. Both qualitative and quantitative methods are covered.
Instructor(s): B. Silver; C. Thornton.

AS.230.651. Political Sociology.
This seminar surveys key problems of political sociology including the rise of the modern state, the origins and nature of liberal democracy, the relationship between political and economic power, the nation-state model and nationalism, ideology and political contention, collective identity, and collective action.
Instructor(s): J. Andreas
Area: Social and Behavioral Sciences.

This course will focus on how and why urban neighborhoods change. Why does vacant housing grow in some communities, while others seem on the brink of gentrification? Who benefits from neighborhood investment in Baltimore? Can urban revitalization benefit all residents? How can we study these challenging issues? These concerns are as relevant as they have ever been, as Baltimore contends with life after the death of Freddie Gray, contentious investment plans with major developers, and stubborn levels of poverty and crime. In this course, we will read scholarship in urban sociology, economics and housing policy data. A significant portion of the course will be dedicated to the analysis of longitudinal data on neighborhood change in the areas around both of Hopkins’ campuses, as well as other communities in the city. The data includes the perspectives of residents, landlords, developers, and community leaders, as well as ground-level observations of street and housing conditions. The course provides students an opportunity to become involved in timely and relevant research in the city, and possibly produce papers that would be suitable for conference submissions or journal articles. We will also compare efforts in Baltimore to those elsewhere, such as Detroit, Chicago, Brooklyn, Washington, D.C. Previous coursework in statistics, policy, research design and research methods is helpful but not required.
Instructor(s): S. Deluca.

“Culture” is a notoriously difficult concept to pin down. Despite this (or perhaps because of it), there has been an explosion of sociological research and writing on the topic over the past 30 years. This course is a survey of major themes, debates and innovative research which have appeared during this period. Because one semester cannot hope to cover it all, we will center on these topics: understandings of culture and its role in social life coming from several theoretical traditions, processes of cultural production and reception, methods of studying culture, and the role of culture in reproducing social inequality.
Instructor(s): T. Nelson
Area: Social and Behavioral Sciences.

This course will introduce students to a range of software programs that are critical for conducting social scientific research in the 21st century. Students will develop competency in the use of computer programs for statistical analysis, database management, the creation of maps and timelines, and the presentation of research reports. The course uses examples from ongoing social science faculty research projects at Johns Hopkins on global inequality and international development.
Instructor(s): S. Upadhyay.

AS.230.674. Political Economy of India.
This course is designed to critically engage political economy questions in contemporary India. The course will focus on the post-colonial era. A basic understanding of India’s contemporary political economy is required.
Instructor(s): R. Agarwala
Area: Social and Behavioral Sciences.

Instructor(s): B. Silver.
AS.230.685. TRP PROPOSAL SEMINAR. This seminar includes all members of the second year cohort of sociology graduate students. Class meetings will provide feedback and guidance as students develop proposals for their Trial Research Papers. The course will also include a series of professional developments seminars. For Sociology PhD students only. Instructor(s): A. Cherlin.

AS.230.690. TRP PRESENTATION SEMINAR. This seminar includes all members of the third year cohort of sociology graduate students. Class meetings will provide feedback and guidance as students revise the final drafts of their Trial Research Papers. For Sociology PhD students only. Instructor(s): A. Cherlin.

AS.230.800. Independent Study. Instructor(s): Staff.

AS.230.801. Research Assistantship. Instructor(s): Staff.


AS.230.811. Teaching Assistantship. Instructor(s): Staff.

AS.230.815. Trial Research Paper I. Instructor(s): Staff.

AS.230.816. Trial Research Paper II. Instructor(s): Staff.

AS.230.817. Trial Research Paper III. Instructor(s): Staff.

AS.230.820. Sociology Research Practicum. This course is for graduate students in the PhD program in Sociology to obtain graduate credit for work off campus that provides training and the development of skills in teaching and/or research. Before the practicum is begun, the graduate student must identify a sponsoring faculty member or seek permission from the student’s faculty advisor. The faculty member or adviser must sign a form that certifies that graduate credit will be granted, verifies the nature of the work to be performed by the student and explains how the practicum helps to fulfill the degree requirement. Once completed, the sponsoring faculty member or adviser submits a grade of pass or fail for the student. This course may be used for Curricular Practical Training (CPT). Instructor(s): Staff.

Cross Listed Courses

Political Science
AS.191.206. Violence, Fast and Slow. 3.0 Credits. Is poverty a form of violence? What about lead contamination in drinking water? How about rising sea levels? Do abrupt forms of violence supervene on slower forms? Can political struggles around violence be fast and slow? Can peacekeeping efforts? In this class, we read about violence, fast and slow Instructor(s): J. Mohorcich

Area: Humanities, Social and Behavioral Sciences.

East Asian Studies
AS.310.307. Governance and Politics in China. 3.0 Credits. A dramatic rise of popular protests in China today has spurred lively discussions about the causes, dynamics, and impact of these protests. This course will provide students with an opportunity to understand these issues by discussing the social, institutional and cultural background of protests, major forms of protest, social groups involved, government responses, and social implications of various kinds of protests. The first part of the course will explore significant socio-economic changes since 1978 and the effects of these changes on China’s social structure and stratification. This part will also examine changes in governance and political systems in the reform era and review important theories of contentious politics. The second part will examine protests by distinct social groups, including peasants, workers, homeowners, and ethnic minority groups, pro-democratic activists, among others. This part will identify similarities and differences in the demands and actions of different groups, introduce the major forms of popular resistance, and explore how the state deals with them accordingly. The course will conclude with discussion of the outcomes of social protests in China and make a cross-national comparison between protests in China and other authoritarian states. By taking China as an example, this course will enhance students’ knowledge about forms of popular contention and government responses in an authoritarian regime as well as help students develop analytical and critical thinking skills with regard to contentious politics.

Instructor(s): Y. Li

Area: Social and Behavioral Sciences

Writing Intensive.

AS.310.402. Labor Politics in China. 3.0 Credits. This course explores the transformation of labor relations in China over the past century. It will cover the origins of the labor movement, the changes brought about by the 1949 Revolution, the industrial battles of the Cultural Revolution, the traumatic restructuring of state-owned enterprises over the past two decades, the rise of private enterprise and export-oriented industry, the conditions faced by migrant workers today, and recent developments in industrial relations and labor conflict. The course is designed for upper division undergraduates and graduate students. Cross-listed with Sociology and International Studies (CP).

Instructor(s): G. He; J. Andreas

Area: Social and Behavioral Sciences

Writing Intensive.
AS.360.247. Introduction to Social Policy: Baltimore and Beyond. 3.0 Credits.
This course will introduce students to basic concepts in economics, political science and sociology relevant to the study of social problems and the programs designed to remedy them. It will address the many inequalities in access to education and health care, unequal treatment in the criminal justice system, disparities in income and wealth, and differential access to political power. The focus will be on designing effective policies at the national and local level to address these pressing issues. This course is open to all students, but will be required for the new Social Policy Minor. The course is also recommended for students who are interested in law school, medical school, programs in public health, and graduate school in related social science fields. This course does not count as one of the required courses for the Economics major or minor, but it is required for the Social Policy Minor. Cross list with Sociology, Economics and Political Science. Freshman, Sophomore and Juniors only.
Instructor(s): B. Morgan; D. Schlozman; S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.360.372. Poverty and Public Policy. 3.0 Credits.
This course examines the causes and consequences of U.S. urban poverty, its implications for health and wellbeing, and explores strategies for addressing it. We cover the major theoretical explanations scholars have advanced to explain the persistence of urban poverty including labor markets, residential segregation, welfare policy, family structure, and the criminal justice system. Within each topic area, students are introduced to a range of interventions aimed at alleviating urban poverty. Students will conduct a formal policy analysis of 20 pages and participate in a mock congressional hearing. Permission of instructor required.
Instructor(s): K. Edin
Area: Social and Behavioral Sciences
Writing Intensive.

AS.360.380. Making America Social Policy. 3.0 Credits.
This course analyzes the distinctive US welfare state in historical and comparative perspective. We begin with a survey of the policy context, an historical overview from the poorhouses through the Great Society, and a tour of welfare states across the rich democracies. We then survey developments – and explain the actual workings of policy – across jobs, education, welfare, pensions, and health care. We explore the institutional and political factors behind their divergent trajectories through conservative revival and the age of Obama. Students will write a seminar paper exploring policy development over time in a program or area of their choosing. Enrollment restricted to Social Policy minors only.
Instructor(s): D. Schlozman
Area: Social and Behavioral Sciences
Writing Intensive.

AS.360.387. Cities, Crime, and the Constitution. 3.0 Credits.
This course is meant to introduce students to the profound challenge of crime in American cities and to the opportunities and obstacles to address it. From gangs, gun violence, and the narcotics trade to crimes targeting vulnerable populations like children and the elderly, the course will survey the breadth and character of criminal enterprises in cities like Baltimore. Students will confront vexing questions raised by contemporary criminal justice practices relating to race, poverty, privacy, and policing. Students will also examine whether institutional reform in the areas of juvenile justice, conviction integrity, fairness in sentencing, and reentry reflect the Constitution's promise of equal justice for all.
Instructor(s): T. Vignarajah
Area: Social and Behavioral Sciences.

AS.360.401. Social Policy Seminar. 3.0 Credits.
This course is designed for students who have completed either the Baltimore intensive semester of the Social Policy Minor. The students will make presentations and pursue joint projects based on what they have learned during the intensive semesters concerning key social policy issues.
Instructor(s): S. Teles
Area: Social and Behavioral Sciences.

Program in Latin American Studies
AS.361.130. Introduction to Latin American Studies. 3.0 Credits.
The goal of this course is to provide an overview of Latin America, analyzing political and cultural aspects, chronologically organized. We will begin studying the origins of the multi-ethnic societies, starting with the ancient civilizations and their transformation under colonization. It is important to understand the survival of cultural traits among indigenous peasants today in the countries that were the cradle of ancient civilizations: Mexico, Guatemala and the Andean countries. In the republican era the course will focus on the classical Caribbean dictators in the first half of the 20th century and their reflection in the literature, comparing the historical reality with the magic representation in the work of Garcia Marquez. The course will scrutinize the most important revolutions in the continent: the Mexican, Cuban and Bolivian revolutions and the geopolitics of USA in the Americas. Weekly lectures related to the assigned reading will focus on specific periods, topics and regions. After each lecture, we will review the material, connecting specific details from the readings with the more theoretical aspects provided in my lecture. The course has a website where the PowerPoint presentations will be posted. Students are encouraged to post their questions, comments and suggestions on the web after their readings. Students will be given a study guide for each lecture, which will be the basis for the exams. Our perspective on Latin America will be enhanced by a selection of few films related to the topics.
Instructor(s): E. Cervone
Area: Humanities, Social and Behavioral Sciences.
Center for Africana Studies

AS.362.111. Introduction to African American Studies. 3.0 Credits.

This is an introductory course on the African-American experience. People of African descent were brought by force to the United States (and other parts of the "New World") yet still managed to forge a rich, resilient, and collective existence. Despite the cruelty of the institution of slavery, African Americans carved out their own cultural systems and a complex body of political and social ideas about the significance of their African roots, as well as the contradictory practices of American democracy and the oppression of black people. This course surveys and analyzes a wide spectrum of contributions made by intellectuals, political leaders, organizations, and race-based strategies that interdependently led to African Americans securing a central and unyielding place in American society.

Instructor(s): K. McDonald
Area: Humanities, Social and Behavioral Sciences.


‘Africa rising’ has become an influential, albeit contested, narrative used by institutions like the International Monetary Fund and World Economic Forum to describe the rapid economic growth in 21st century Africa. This rapid ‘economic growth has been accompanied by another type of ‘Africa Rising’ – a mushrooming of social protest and popular uprisings across the continent. The course will introduce important theoretical perspectives, debates, and examples to equip students to critically examine contemporary social dynamics through the interconnected themes of land, labor and environmental rights and struggles that have gripped the African continent. What has given rise to these awakenings? Who are the actors involved in these actions? What are their demands and strategies? What lessons does it hold for social movement theory and development more broadly? The first section focuses on land reclamation movements, the new wave of ‘land grabs’ and responses from below. The second section presents the role of labour movements and its intersection with popular uprisings. The third section considers responses from communities and movements to the ecological destruction and climate change.

Instructor(s): R. Jacobs
Area: Humanities.

AS.362.207. Race and public policy in comparative perspective. 3.0 Credits.

This course will explore the relationship between racial inequality, racial politics, and policy-making in the western world, particularly as it concerns the fight for equality by people of African descent in the US, Canada, Britain, and France. It will cover historical and contemporary struggles over policy, beginning with the African-American civil rights movement, the ensuing War on Poverty and War on Drugs, and followed by contemporary debates over immigration, racial segregation, poverty and racial economic inequality across the four countries. We will take insights from theory and empirical research to study the role that racial constructs and politics play in policy designs, contests over power and resources, electoral representation, public opinion, social movements, and political change. Through case studies of policies aimed at racial inequality (e.g., affirmative action, police reform, urban revitalization), we will examine why and under what circumstances they arise, what form they take, and in what ways they alleviate or reproduce racial inequality. These questions will be considered in light of the broader impact of neo-liberalism on normative ideas about policy, race, and inequality.

Instructor(s): A. Livingstone
Area: Humanities.

AS.362.314. Police and Prisons in Comparative Perspective. 3.0 Credits.

This course will examine policing and prisons in the United States and beyond, with a focus on racial inequality. It will consist of two parts. First, we will explore the contemporary state of prisons and policing in the United States and look at debates around the rise of “mass incarceration” and aggressive forms of policing in the final third of the 20th century. Second, we will explore policing and prison in other parts of the globe in the contemporary moment, highlighting similarities and differences from the U.S. case. What can studying the instruments of social control in other societies reveal about our own? Students will develop an understanding of major trends, keywords, and debates in the literature on policing and prisons, with particular reference to race and racism.

Instructor(s): S. Schrader
Area: Humanities.

Study of Women, Gender, Sexuality

AS.363.328. Beyond the Global West: Gender/Sexuality, Post-colonialism & Global Capitalism: Feminist Inquiries from Asian Perspectives. 3.0 Credits.

This course examines gender and sexuality issues in both East and South Asian Societies and situates subject matters in the broader contexts of post-colonialism, state formation, revolution and global capitalism.

Instructor(s): Y. Dong
Area: Humanities
Writing Intensive.

Study of Women, Gender, and Sexuality

https://krieger.jhu.edu/wgs/

The Program for the Study of Women, Gender, and Sexuality works to catalyze intellectual discussions—at Johns Hopkins, in Baltimore, and beyond—in which gender and sexuality concerns play important roles.

We are a forum that brings together undergraduates, graduate students, and faculty from different departments who share an interest and a need to address and interrogate their research fields from a queer, feminist, or otherwise gender- and sexuality-inflected perspective.

The activities of the program integrate teaching and research on all levels. Most importantly, the program encourages and supports initiatives for research projects, events, and curriculum developments emerging from all parts of the JHU campus—undergraduate students, graduate students, and faculty alike.

WGS brings new scholarship into conversation on campus in three main ways. First, the program sponsors a seminar series that brings speakers from academia and the broader community to Johns Hopkins University. Second, we organize workshops each semester around multiyear themes, such as “Affect and Emotion” and “Medical Humanities.” Finally, we bring renowned scholars and public figures to the Homewood campus through our annual Visiting Distinguished Professorship. Recent visiting professors have included Karen Barad (University of California-Santa Cruz), Joan Wallach Scott (Institute for Advanced Studies), Trinh-Minh Ha (University of California-Berkeley), and Michael Warner (Yale University).

WGS offers an undergraduate minor that enables students to devote a portion of their education to the study of women, gender, sexuality, and related issues. WGS also offers research fellowships for undergraduate and graduate students. Graduate students also have the opportunity to design and teach a course.
Through both interdisciplinary and specialized courses, students are encouraged to develop critical and comparative approaches to the study of gender and sexuality—often in interaction with related issues such as race, class, global health, and violence. Courses in the program are taught by prominent faculty members from across the disciplines and are cross-listed through a variety of departments. New courses are added frequently.

WGS also offers an undergraduate Seminar/Practicum, where students combine volunteer work in a local social service agency with a seminar that explores the connections between social justice and academic inquiry.

Minor Requirements

Students can receive a minor in women, gender, and sexuality by completing six one-semester courses. The following courses constitute the WGS core curriculum (363 prefix); they are offered every year:

- Introduction to the Study of Women, Gender, and Sexuality
- Feminist and Queer Theory
- Gender and Sexuality Beyond the Global West
- Health, Medicine, Gender, and Sexuality
- Internship/Practicum (offered in collaboration with the JHU Center for Social Concern, the internship-practicum combines academic work with volunteer experience)

Students are asked to complete at least two courses from the core WGS curriculum and may choose among the courses cross-listed with other departments for the remaining four. No more than two courses can be lower level (100 or 200). Students must earn a C- or better in all minor requirements and courses may not be taken satisfactory/unsatisfactory.

Please direct inquiries about the undergraduate minor to Katrin Pahl (kpahl@jhu.edu).

**Minor Requirements**

<table>
<thead>
<tr>
<th>Two core courses (selected from the following):</th>
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<tbody>
<tr>
<td>AS.363.201 Introduction to the Study of Women, Gender, and Sexuality</td>
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<tr>
<td>AS.363.301 Feminist and Queer Theory</td>
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<tr>
<td>AS.363.325 Black Women, Feminism and Activism</td>
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<tr>
<td>AS.363.350 Gender, Sexuality, and Religion: Muslim (In)Visibilities</td>
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<tr>
<td>AS.363.417 Internship/Practicum: Critical Theory and the Possibility of Social Justice</td>
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**Four additional Women, Gender and Sexuality courses** | 12 |

Total Credits | 18

* At least four 300- or 400-level courses are required for the minor. While core courses offered in recent years are listed as options, not all courses listed as core courses will be offered on a regular basis and some may have been offered only once. They are listed to provide examples of the types of courses that may be offered.

** These are either courses cross-listed with the Study of Women, Gender, and Sexuality or courses AS.363.xxx.

For current faculty and contact information go to http://anthropology.jhu.edu/wgs/directory.html

Faculty Directors
Todd Shepard
Director
Katrin Pahl
Director

School of Arts & Sciences
Sam Chambers
Associate Professor, Political Science

Jennifer Culbert
Associate Professor, Political Science

Clara Han
Associate Professor, Anthropology

Anne Eakin Moss
Assistant Professor, Humanities Center

Christopher Nealon
Professor, English

Johns Hopkins of School of Medicine
Jeremy Greene
Associate Professor, History of Medicine

Assistant Professor
Clara Han
M.D., Ph.D., Assistant Professor (Anthropology).

Professor
Christopher Nealon
Ph.D., Professor (English).

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

**AS.363.201. Introduction to the Study of Women, Gender, and Sexuality. 3.0 Credits.**

This course offers an introduction into the fields of Women’s Studies, Gender Studies, and Sexuality Studies. It explores why we need these fields of inquiry, how they have emerged historically, what some of the major and most interesting contributions are and where we might go from here. The course is meant as a preparation for the other WGS core courses.

Instructor(s): K. Pahl
Area: Humanities, Social and Behavioral Sciences.

**AS.363.301. Feminist and Queer Theory. 3.0 Credits.**

This course will encourage encounters with a number of concepts from a critical gendered perspective, including: sameness/difference, identity politics, race/gender, loyalty, security, queer ethics, and queerness in media.

Instructor(s): K. Goktepe
Writing Intensive.

**AS.363.302. Queer Identity?. 3.0 Credits.**

What does "queer" mean? And who gets to say? This course examines tensions, ambiguities, and contradictions that have emerged in popular, political, and theoretical discourses over the past 25 years.

Instructor(s): J. Chilton
Area: Humanities, Social and Behavioral Sciences.
AS.363.303. Feminism and Queer Theory: "The Master's Tools Will Never Dismantle the Master's House". 3.0 Credits.
As a Black lesbian woman, Lorde denounced white feminism for being complicit with patriarchy by not acknowledging marginal women's experiences as a source of strength and creativity. Inspired by the title and impetus of Lorde's essay, this course seeks to ask what happens when we start seeing the world through unfamiliar, alternative, tools or sensibilities? What different pictures of critique—ones that don't merely focus on replacing the master's house with other strong edifices—are allowed to emerge? With these questions in mind, the main objective of this course is to expose us to alternative sensibilities and ways of thinking offered by voices that experience gender and sexuality beyond conventional Western norms and counter-norms.
Instructor(s): T. Zille
Area: Humanities
Writing Intensive.

AS.363.304. Love and Its Discontents. 3.0 Credits.
This course aims to familiarize students with a wide-range of feminist and queer conceptions of love as a political force. While reading theoretical texts and selections of poetry, students will be encouraged to interrogate the political implications of different conceptions of love, Eros, and desire.
Instructor(s): K. Glanz
Area: Humanities

AS.363.305. Feminist & Queer Theory: Feminist Queer Theories: Past & Present. 3.0 Credits.
This course offers a range of transnational and US feminist and queer theories, starting from the present with which we are familiar and moving backwards into history. It is designed to facilitate deep engagement with feminist and queer theoretical language/s and concepts, as well as critical approaches applicable to further discourses beyond the class in other disciplines and outside them. The course is divided into 5 units, which roughly organize the reading thematically around the topics of: 1. language and cultural translation, 2. feminist critique, and thinking through the lenses of 3. queerness, 4. race and 5. class. The organization reflects the focus of each unit, yet the topics are intertwined. Students are encouraged to be patient with themselves and the readings and, especially if encountering theoretical discourses for the first time, not to expect to understand everything immediately but rather to acclimate to the radically different thinking of others throughout the course of the semester.
Instructor(s): M. Nitis
Area: Humanities
Writing Intensive.

AS.363.315. Genes, Gender and Reproduction in 20th Century America. 3.0 Credits.
Using the tools of historiography, anthropology and cultural studies, this course will discuss 20th and 21st century debates about gender, genetics and reproduction, family, bioethics and biomedical technology.
Instructor(s): M. Schmidt
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.363.316. Health, Medicine, Gender, and Sexuality: Gender, Sexuality, and AIDS in Africa. 3.0 Credits.
This course uses historical sources to connect constructions of gender and sexuality in Africa from the pre-colonial, colonial, and post-colonial periods to the epidemiology, politics, and culture of the AIDS epidemic.
Instructor(s): J. Cummiskey
Area: Humanities, Natural Sciences
Writing Intensive.

AS.363.325. Black Women, Feminism and Activism. 3.0 Credits.
This course will explore the intersection of race, gender/sexuality and class in regards to activism and social justice by considering black feminist thought and the experiences of black women activitists in the 20th century.
Instructor(s): A. Davis
Area: Humanities.

AS.363.326. Capitalism and Gender. 3.0 Credits.
This course explores a range of critical work relating capitalism to gender, sex, and sexuality: from theoretical accounts of witchcraft, marriage, and prostitution at the birth of capitalist social relations, to classic feminist debates around housework and reproduction, to contemporary thought on affect, finance, and the global dimensions of women's labor. As a centerpiece to the course we will read sections from Capital, interrogating the place of gender in Marx's text while developing a grasp of its arguments and influence.
Instructor(s): C. Westcott
Area: Humanities
Writing Intensive.

AS.363.327. Gender and Sexuality beyond the Global West: Feminism and Homosexuality in the Islamic World. 3.0 Credits.
This course explores the emerging discourses on gender and sexuality in Islam. As minorities, women and homosexuals developed a shared interest in exegetical tools challenging the dominant narratives that shaped a so-called Muslim tradition. We will investigate disruptive narratives that take place within theological debates but we will also grapple with discourses that have been produced on women and homosexuals in the Islamic world. We will deal with the question of imposing on Muslims a specific conception - that a good amount of scholars have identified as being western - of homosexuality and feminism. A set of questions will guide us through our readings: does sexuality constitute an identity or refer to a practice? Should equality be reduced to identity or can it be understood differently? Are agency and freedom best manifested through subversion and opposition?
Instructor(s): L. Ferhat
Area: Humanities.

AS.363.328. Beyond the Global West: Gender/Sexuality, Post-colonialism & Global Capitalism: Feminist Inquiries from Asian Perspectives. 3.0 Credits.
This course examines gender and sexuality issues in both East and South Asian Societies and situates subject matters in the broader contexts of post-colonialism, state formation, revolution and global capitalism.
Instructor(s): Y. Dong
Area: Humanities
Writing Intensive.

AS.363.329. Gender and Sexuality Beyond the Global West: Gender and Sexuality in Contemporary Art in North Africa and the Middle East. 3.0 Credits.
This course aims to explore how gender and sexuality is situated in contemporary artistic practices in the geographical Middle East, through concepts of religion, war, revolution, resistance, nation-state, post-colonialism, and neoliberalism, especially as written and observed firsthand by artists, curators and scholars from the Middle East and North Africa region and their diasporas. Every week, under an overarching topic, notions of gender and sexuality will be questioned through works of selected artists across the region, as well as texts that provide the historical, theoretical, sociological and political background.
Instructor(s): E. Ince
Area: Humanities
Writing Intensive.
AS.363.330. Gender & Sexuality beyond the Global West: The Poetics of “Nasty Women” in Archaic and Classical Greece. 3.0 Credits.
This course is meant to examine the depiction of ambitious and intelligent women in ancient Greek literature of the Archaic and Classics Periods. During this semester we will acquire the critical tools necessary to think about gender in antiquity, with a particular focus on Clytemnestra, Medea, and Helen. Students will gain historical background of ancient Greece, become familiar with a variety of theoretical approaches for understanding gender in antiquity, and develop strategies for reading ancient Greek texts, especially epic, lyric poetry, and tragedy. Special emphasis will be given to exchange, gender, and feminist theoretical frameworks. All course material will be in English.
Instructor(s): R. Franklin
Area: Humanities
Writing Intensive.

AS.363.334. The Poetics and Politics of Sex: Gender and Sexuality in Twentieth Century European Empires. 3.0 Credits.
This course explores themes around sexuality and empire in nineteenth and twentieth century European empires, including (but not limited to) the gendered policies of colonial regimes, how colonialism encouraged ideal forms of femininity and masculinity, and nationalist feminisms in the era of independence.
Instructor(s): S. Rahnama; S. Stewart
Area: Humanities
Writing Intensive.

AS.363.336. The Poetics & Politics of Sex: Feminist Separatism & Its Afterlives. 3.0 Credits.
In 1977, feminist theorist Marilyn Frye asked, "What is it about separation, in any or all of its many forms and degrees, that makes it so basic and so sinister, so exciting and so repellent?" Her essay, "Some Reflections on Separatism and Power" was a response to the emergence and persistence in the 1960s of a feminist separatist politics, as well as its many detractors, both from outside the feminist movement and within (many black feminists, for example, critiqued the movement’s essentialism and its positioning of gender and sexuality above considerations of race). Today, Frye’s question still remains a live one; think, for example, of the now commonplace exclamation that one will "move to Canada" (or "leave Earth" as Tina Fey has it) in the face of an ominous political possibility. In a less facetious form, one might consider the separatism latent in the emergence of queer futurity politics, safe space discourse, and a more general pessimism about reform and assimilation as satisfying answers to a continually oppressive status quo. In this course, we will consider the ongoing salience of the idea of separatism, particularly as it is engaged within politics of gender and sexuality.
Instructor(s): N. Dubay
Area: Humanities

AS.363.337. The Poetics & Politics of Sex: Struck From the Record: Reclaiming Women’s Contribution to the Global March Towards Modernity. 3.0 Credits.
The course examines claims that present women’s historic role as limited to confinement in the home, and bearing children. Students will gain an understanding of the complexity the world’s path to modernity and the important, and until recently, silent roles that women have played.
Instructor(s): S. Stewart
Area: Humanities
Writing Intensive.

AS.363.340. Costumes and Masquerades of the Self. 3.0 Credits.
Instructor(s): E. Ender
Area: Humanities.

AS.363.341. The Making of Modern Gender. 3.0 Credits.
Gender as we know it is not timeless. Today, gender roles and the assumption that there are only two genders are contested and debated. With the binary gender system thus perhaps nearing its end, we might wonder if it had a beginning. In fact, the idea that there are two sexes and that they not only assume different roles in society but also exhibit different character traits, has emerged historically around 1800. Early German Romanticism played a seminal role in the making of modern gender and sexuality. For the first time, woman was considered not a lesser version of man, but a different being with a value of her own. The idea of gender complementation emerged, and this idea, in turn, put more pressure than ever on heterosexuality. In this course, we will trace the history of anatomy and explore the role of literature and the other arts in the making and unmaking of gender.
Instructor(s): K. Pahl
Area: Humanities

AS.363.350. Gender, Sexuality, and Religion: Muslim (In)Visibilities. 3.0 Credits.
"Muslim (In)Visibilities" focuses on gender and sexuality through Orientalism. It considers representations of Muslim bodies within popular Western discourses and what such (in)visibilities are productive of.
Instructor(s): M. Banahi
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.363.395. Poetics and Politics of Sex: Intimacy and Its Discontents. 3.0 Credits.
Where might one turn for intimacy if its available forms are dissatisfying? What happens when politics authorizes certain forms of intimacy but not others? How might intimacies and their discontents lack a language to do them justice? This course explores problems with normative intimacies such as monogamy, family, and intimate publics. It covers issues such as optimism, ambivalence, trauma, queerness, war, and longing. It also explores how authors try to describe intimacy through different genres, such as poems, aphorisms, novellas, essays, and scholarly articles.
Instructor(s): C. Shomura
Area: Humanities
Writing Intensive.

AS.363.417. Internship/Practicum: Critical Theory and the Possibility of Social Justice. 4.0 Credits.
This course combines a weekly seminar with 4 hours per week in a Baltimore social justice organization, coordinated by the JHU Center for Social Concern. Class discussions draw on readings in ethnography and feminist, queer and critical race studies to address topics such as race, class and gender inequality, neoliberal development, health, institutional violence and politically engaged research.
Instructor(s): A. Krauss
Area: Humanities, Social and Behavioral Sciences.
AS.363.418. Internship Practicum: Feminist Ethnographic Methods and Social Justice Organizations. 3.0 Credits.
This course is for students who are working with social justice organizations. It will introduce students to ethnographic research that is informed by feminist methodologies of listening, care, ethics, and structural analysis. Methods will be oriented to the “inside” and “outside” of organizations. “Inside” the organization might refer to listening to marginalized voices, examining the place of bureaucracy and paperwork, and engaging with activist research and records. Reaching beyond the organization proper, we will learn to analyze localities, and less tangible zones such as social media, political networks, and the state.
Instructor(s): M. Sehdev
Area: Humanities.

AS.363.419. Internship/Practicum: Dividing the Divisions. 3.0 Credits.
This course examines the essentially political ways in which class, race, and gender relate to one another in the context of social division of labor, resources, and representation. It intends to show how reflection and transformative practice can best change the instances of social injustice through introducing new divisions within the existing imposed divisions in a manner that will make ineffective and inoperative the latter. With the help of the analytic of the central modern notion of class and class relations, we will revisit the relations of gender and race in concrete situations. The course is twofold, practical and theoretical within the framework of Women, Gender, and Sexuality. In one fold, students will have the chance to engage in some kind of practical-social activity out in an actual community with people who are committed to all sorts of social work. This can span from LGBTQ or immigrant workers to addiction among women. In the other fold, we will undertake theoretical reflections on various aspects of these activities. We will read texts mainly in feminist and Marxist traditions. How these two folds relate to one another will be one key question of the whole course.
Instructor(s): O. Mehrgan
Area: Humanities.

AS.363.420. Stories of Hysteria. 3.0 Credits.
Hysteria, an elusive and polymorphous disease associated with the female body, was first diagnosed in Greek Antiquity. When, in the late nineteenth-century, Sigmund Freud decided to study it, he made discoveries that shaped in a decisive way the new science of psychoanalysis and offered new foundations for discussions of what we might now call “psychosomatic illness.” Though rarely diagnosed nowadays, hysteria provides a fascinating introduction to medical, clinical, social, and ethical questions connected to gender that have lost none of their relevance. We will study fictional narratives from the 18th century to the present as if they were case-studies – as a way of appraising hysteria’s changing and provocatively volatile definitions across time and in different cultural frameworks. Among our topics: trauma and PTSD, the concept of repression, masculinities, women and madness, and, above all, transformations in gender roles and identities in the modern era. In addition to selected readings of medical and historical materials available on Blackboard, texts for study are: The Nun (Diderot), Triby (du Maurier), Fragment of a Case of Hysteria (Freud), Regeneration (Barker), The Icarus Girl (Oyeyemi), Redeployment (Klay).
Instructor(s): E. Ender
Area: Humanities.

AS.363.445. Reading Judith Shakespeare: Women and Gender in Elizabethan England. 3.0 Credits.
If Shakespeare had a sister who went to London to be a writer, what would she write? Virginia Woolf’s account of the thwarted career of Shakespeare’s hypothetical sister, Judith, in A Room of One’s Own frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, and Mary Wroth. Working within a selected historical context, students will create fictional biographies of “Judith Shakespeare,” including her perspective on our identified authors and a sample or description of Judith’s own literary accomplishments. Secondary course readings will reflect contemporary economic, political, and religious contexts.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

AS.363.502. Independent Study. 3.0 Credits.
Instructor(s): E. Patton.

AS.363.601. WGS Graduate Colloquium.
Presenting new scholarship and art, the WGS Graduate Colloquium will catalyze intellectual discussions in which gender and sexuality concerns play important roles. The seminar includes lectures by invited speakers and a film series. Graduate students are encouraged to develop critical and comparative approaches to the study of gender and sexuality—often in interaction with related issues such as race, class, violence, law, medicine, art, and emotionality. This seminar can be taken for credit or audit.
Instructor(s): K. Pahl; T. Shepard
Area: Humanities.

Cross Listed Courses

History of Art
AS.010.331. The Renaissance Body Exposed: Exhibiting the Nude in European Art 1400-1550. 3.0 Credits.
Explores the extraordinary currency of the naked human figure in pre-modern European visual culture, only inadequately accounted for by explanations such as the “rise of naturalism” or the “revival of antiquity.” Will also explore curatorial questions arising from an exhibition currently in preparation on the Renaissance nude. Assignment in the form of catalog texts and a “virtual exhibition.”
Instructor(s): S. Campbell
Area: Humanities
Writing Intensive.

Classics
AS.040.140. Gender and Sexuality in Early Greece and the Eastern Mediterranean. 3.0 Credits.
In this course we will explore evidence and interpretations of gender and sexuality in the region of the Aegean and eastern Mediterranean during the third and second millennia BCE. Material investigated will include the “snake goddess” figures from Minoan Crete, anthropomorphic figures from the Cyclades and Cyprus, wall paintings, etc. In each case we will consider the history of interpretation as well as investigate the objects’ anthropological and sociocultural contexts. Discussion topics will include representational ambiguity, the specific materialities of objects, and their possible roles in activities construing gender. The course will incorporate material from the JHU Archaeological Museum.
Instructor(s): E. Anderson
Area: Humanities.
**AS.040.218. Celebration and Performance in Early Greece. 3.0 Credits.**  
Surviving imagery suggests that persons in Minoan and Mycenaean societies engaged in various celebratory performances, including processions, feasts, and ecstatic dance. This course explores archaeological evidence of such celebrations, focusing on sociocultural roles, bodily experience, and interpretive challenges.  
Instructor(s): E. Anderson  
Area: Humanities.

**English**

**AS.060.201. The Nineteenth Century British Novel. 3.0 Credits.**  
Reading major novelists from the nineteenth century including Austen, C. Brontë, Dickens, Eliot, Hardy, and Conrad. We will pay attention to formal conventions, and relation to social and historical context.  
Instructor(s): J. Rosenthal  
Area: Humanities.

**AS.060.205. Feminist Fiction: Violence, Sex and Gender. 3.0 Credits.**  
This course will start with passages from Lysistrata and the Book of Judges, and have as a running concern the overlapping structures of violence, race and gender. Novels will include the following pairs: Jane Eyre and Wide Sargasso Sea, The Bluest Eye and Bastard Out of Carolina, The Handmaid’s Tale and Octavia Butler’s novella Bloodchild.  
Instructor(s): M. Favret  
Area: Humanities.  
Writing Intensive.

**AS.060.319. Values and Gender in Nineteenth-Century British Literature. 3.0 Credits.**  
The course considers how nineteenth-century British authors—including Ruskin, Gaskell, Eliot, and Wilde—engage and oppose various sets of values in their representations of gender.  
Instructor(s): M. Flaherty  
Area: Humanities.  
Writing Intensive.

**AS.060.320. Icons of Feminism. 3.0 Credits.**  
This course looks at four crucial figures who have haunted feminist thought and responses to feminism over the centuries. Sappho, known as the first female poet, remains an enigmatic icon of feminine desire and creativity; Antigone, the daughter of Oedipus and the heroine of Sophocles’s play Antigone, still inspires feminist analyses of women’s relationship to law, the state and civil society; and Joan of Arc, the militant maid of Orleans, troubles thinking about women and violence as well as women, religion and spirituality. The last figure is Mary Wollstonecraft, often cited as the first modern feminist. The course will examine literary works written about these iconic figures, as well as contemporary feminist writing about their influence and viability as models for the future of feminism.  
Instructor(s): M. Favret  
Area: Humanities.  
Writing Intensive.

**AS.060.348. Virginia Woolf and Bloomsbury. 3.0 Credits.**  
An exploration of the achievements and investments of one of the most influential coteries in the history of Britain. In addition to delving into key fictions by Virginia Woolf, we will examine novels by Leonard Woolf and E. M. Forster, art criticism by Roger Fry and Clive Bell, biographical essays by Lytton Strachey, economic writings by John Maynard Keynes, and poetry by T. S. Eliot.  
Instructor(s): D. Mao  
Area: Humanities.  
Writing Intensive.

**AS.060.388. Old World/New World Women. 3.0 Credits.**  
The course considers the transatlantic writing of three women in the early modern period, Anne Bradstreet, Aphra Behn, and Phillipis Wheatley. We will consider issues of identity, spatiality, religion, commerce, enforced labor, sexuality, race, and gender, along with literary tradition, formal analysis and poetics. We will read a good deal of these early women writers. Foremost in our mind will be the question of how perceptions of space and time are mediated through the global experiences of early modernity.  
Instructor(s): S. Achinstein  
Area: Humanities.  
Writing Intensive.

**Film and Media Studies**

**AS.061.389. Women Making Movies (Europe). 3.0 Credits.**  
This course introduces students to some of the most exciting female directors of the 20th century, asking how gender shaped the production and reception of their films. Do particular directors attribute any significance to the fact of being a woman? Does a director’s gender shape her choice of subject or how she represents it? Does wider knowledge of works directed by women change our sense of the canon and authorship? Covers non-U.S. films, strongly encouraged for FMS majors and minors. Cross-listed with WGS. No pre-requisite.  
Instructor(s): L. Mason  
Area: Humanities.  
Writing Intensive.

**AS.061.391. Love and Film. 3.0 Credits.**  
In this course, we explore different understandings of “love” and the way that film has dealt with the concept as a medium. We explore a variety of approaches to the question of "love" - from the agapic to the familial to the romantic - through a series of interdisciplinary readings ranging from philosophy to anthropology. We will also equally explore the question of how film has engaged with the question of love as a concept, and what depictions of human affection - from the general to the personal - it has offered us. Screenings are required for this course. Lab fee: $50  
Instructor(s): M. Ward  
Area: Humanities.  
Writing Intensive.

**AS.061.393. Violent Attractions. 3.0 Credits.**  
Violence, ritualized and anarchic, celebrated and deplored in popular film from silent era melodrama and slapstick comedy to contemporary sports, crime, and combat films. Twice-weekly screenings; oral presentation; two essays, 6 & 12 pp. Lab fee: $50  
Instructor(s): L. Bucknell  
Area: Humanities.

**AS.061.397. French Masculinities. 3.0 Credits.**  
Examines changing ideals of masculinity in France after 1960 as they found expression on film, rooting the work of iconic stars and directors in their cultural, political and historical contexts.  
Instructor(s): L. Mason  
Area: Humanities.  
Writing Intensive.

**Anthropology**

**AS.070.327. Poverty’s Life: Anthropology of Health & Economy. 3.0 Credits.**  
Medicine, economics, and ethics have profoundly shaped debates on poverty. This course analyzes these debates and tracks the relationships between body, economy, and the everyday. How can anthropological reasoning and methods inform approaches to health and economic scarcity and insecurity?  
Instructor(s): C. Han  
Area: Humanities, Social and Behavioral Sciences  
Writing Intensive.
AS.070.385. From Sexual Nature to Sexual Politics. 3.0 Credits.
This course traces anthropological concern with questions of sexuality. Students will explore anthropological notions of primitive promiscuity, cultural configurations of the correspondence between sex, procreation, and birth, and ideas about sexual rites of passage. The course will end with a discussion of sexual politics in Euro-America and public concern over HIV/AIDS. The course draws on the work of Freud, Malinowski, Meade, Herdt, Povinelli, Rubin, Bersani and Halperin. Cross-listed with Women Gender Studies
Instructor(s): A. Goodfellow
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.070.436. Vulnerability. 3.0 Credits.
Many in the contemporary world live in states of acute vulnerability. In this course, we will look closely at situations like forced displacement, experience of poverty and injury, environmental devastation, and the politics of social protest. Thinking with ethnography, feminist philosophy, fiction, and film, we will explore whether vulnerability may be taken as a condition to live with rather than one to overcome at any cost.
Instructor(s): A. Pandian
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

History
AS.100.201. Freshman Seminar: Prostitution in a Global Perspective, 1750-2012. 3.0 Credits.
This course examines topics such as the ‘medical model’ of prostitution regulation, the rise of international anti-prostitution, and the responses of modern nationalists to sex work in a global context.
Instructor(s): S. Stewart
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.213. Freshman Seminar: History of Gender and the Family in the United States. 3.0 Credits.
For Freshman Only. Discussion style. Introduces major themes since 1700: family sentiment and authority relations; gender and sexuality; family and work; dynamics of family and race. Readings emphasize interdisciplinary perspectives and interpretation of primary sources.
Instructor(s): T. Ditz
Area: Humanities, Social and Behavioral Sciences

AS.100.311. National Pastimes: Sports, Culture, and American History. 3.0 Credits.
National Pastimes examines the development of sports in the United States over the course of the 20th century with a particular interest in the relationship between sports and politics as well as issues of race, gender, sexuality and class.
Instructor(s): A. Davis
Area: Humanities, Social and Behavioral Sciences.

AS.100.323. America in the 1960s. 3.0 Credits.
The years between 1959, when the course begins, and 1971, when it ends, were tumultuous and divisive. This course explores the political, racial, and cultural struggles of a half century ago.
Instructor(s): R. Walters
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.327. Gender and Sexuality in Reformation and Counter-Reformation Europe. 3.0 Credits.
This course will discuss the centrality of gender, sexuality, and gendered rhetoric to the genesis and development of the Protestant Reformation and Catholic Counter-Reformation in Europe.
Instructor(s): J. Keene
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.357. Panic and Liberation: The Politics of Sex in 20th Century Europe. 3.0 Credits.
This course examines the 20th century history of sexual attitudes, desires, behaviors, identities, communities, and movements in Western Europe (most notably, Germany, France, and the United Kingdom).
Instructor(s): T. Shepard
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.359. Gender, Patriarchy, and the English Revolution. 3.0 Credits.
This course explores the varied experiences of gender and gender roles in seventeenth-century Britain and analyzes how these roles were challenged, changed, and sometimes upended during the English Revolution (1642-1660).
Instructor(s): C. Hinchliff
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.372. The Victorians. 3.0 Credits.
This course focuses on the politics of everyday life, consumption, intimate relations, and concepts of the self in Britain and its empire in the long nineteenth century. We devote particular attention to visual culture, entertainment, and the built environment. Course themes include popular nationalism; class differences; gender and body politics; and imperial expansion and racial thought.
Instructor(s): L. Pepitone
Area: Humanities, Social and Behavioral Sciences.

AS.100.397. U.S. Histories Male and Female. 3.0 Credits.
This seminar will be devoted to exploring gender differences as they have been expressed in a sequence of autobiographies and autobiographical fiction set in a shifting social and historical context.
Instructor(s): M. Ryan
Area: Humanities, Social and Behavioral Sciences.

AS.100.424. Women & Modern Chinese History. 3.0 Credits.
This course examines the experience of Chinese women, and also how writers, scholars, and politicians (often male, sometimes foreign) have represented women’s experiences for their own political and social agendas. Cross listed with East Asian Studies.
Instructor(s): T. Meyer-Fong
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.426. Popular Culture in Early Modern Europe. 3.0 Credits.
Witchcraft, magic, carnivals, riots, folk tales, gender roles; fertility cults and violence especially in Britain, Germany, France, and Italy.
Instructor(s): J. Marshall
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.
AS.100.498. History of the Family & Gender in the United States. 3.0 Credits.
Topics include: history of emotions; politics of sexuality and marriage; impact of race, ethnicity, and class on family life; women and gender inequality. Primarily colonial era through the early twentieth century, with some attention to contemporary politics of family, gender, and sexuality.
Instructor(s): T. Ditz
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.635. Topics in European Imperial History.
This graduate reading course covers key topics in European Imperial History, c. 1600-1900.
Instructor(s): G. Paquette
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.100.765. Problems in Women and Gender Studies.
An exploration of recent work in women's and gender history, focusing on some of the following: sexuality, cultural production, politics, family formation, work, religion, difference, and civic orders.
Instructor(s): E. Rowe; H. Kim.

Near Eastern Studies
AS.130.105. Freshman Seminar: Sex, Drugs, and Rock & Roll in Ancient Egypt. 3.0 Credits.
This seminar explores the social roles of sexuality, alcohol, other drugs, music, fragrance, and sensuality in secular and religious areas of Egyptian life, largely but not exclusively during the New Kingdom, ca. 1500 to 1000 B.C. The ancient attitudes towards these elements will be explored through the ancient textual sources in translation and the artistic representations.
Instructor(s): B. Bryan
Area: Humanities
Writing Intensive.

AS.130.330. The Garden of Eden. 3.0 Credits.
References to the story of the Garden of Eden can be found in every significant issue of our time, from sex to politics, from race to the environment. The course will examine the story itself as well as how it’s been interpreted, leading up to today. Enthusiastic participation required.
Instructor(s): E. Robbins
Area: Humanities

AS.130.395. Being... in Ancient Egypt: Ethnicity, Sexuality, and Gender. 3.0 Credits.
What was it like to live in ancient Egypt? At first this question may seem deceivingly straightforward. But with further thought, its complexity becomes clear. Who are we concerned with? How the king lived? A poor farmer? His wife or children? A foreign immigrant? Moreover, what is our evidence for life in Egypt? Do all of the sources support similar interpretations? This course will begin to tackle these questions by considering the experiences of different people in ancient Egypt.
Instructor(s): T. Prakash
Area: Humanities.

History of Science Technology
AS.140.350. Disability in 20th century America: Rights, Restrictions, Reproduction. 3.0 Credits.
Is disability a biological fact or determined by culture? This class discusses different ideas of difference in the context of disability rights, professional power, reproductive technology and bioethics. Cross-listed with Studies of Women, Gender, and Sexuality
Instructor(s): M. Schmidt
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.140.353. Women, Health, and Medicine in Modern America. 3.0 Credits.
This course explores women's interactions with science, medicine, and health in the late-19th and 20th century United States. It is framed by an interest in medicalization, sex/gender, and feminism. Cross-listed with Studies of Women, Gender, and Sexuality.
Instructor(s): D. Stillwell
Area: Humanities, Social and Behavioral Sciences.

AS.140.381. History of Reproduction. 3.0 Credits.
This course investigates the history of reproduction in American medicine, science, politics, and culture. It explores changing ideas about reproductive bodies, sexuality, and the family as well as practices of contraception, conception, and childbirth.
Instructor(s): B. Gurtler
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

Philosophy
AS.150.404. The Idea of Power. 3.0 Credits.
The Idea of Power surveys seminal texts in the history of political thought on the nature, promise, and dangers of political and social power; it also critically engages contemporary texts on race and gender power relations.
Instructor(s): C. Lebron
Area: Humanities.

AS.150.436. Philosophy of Gender. 3.0 Credits.
In this class we will examine philosophical questions about gender, and about the intersections between gender and other social categories including race, class and sexuality. We will focus specifically on questions about the metaphysics of gender and other social categories.
Instructor(s): E. Taylor
Area: Humanities.

Economics
AS.180.252. Economics of Discrimination. 3.0 Credits.
This course examines labor market discrimination by gender, race and ethnicity in the United States. What does the empirical evidence show, and how can we explain it? How much of the difference in observed outcomes is driven by differences in productivity characteristics and how much is due to discrimination? How have economists theorized about discrimination and what methodologies can be employed to test those theories? What has been the impact of public policy in this area; how do large corporations and educational institutions respond; and what can we learn from landmark lawsuits? The course will reinforce skills relevant to all fields of applied economics, including critical evaluation of the theoretical and empirical literature, the reasoned application of statistical techniques, and analysis of current policy issues. Seniors by Permission Only.
Prerequisites: AS.180.102
Instructor(s): B. Morgan
Area: Social and Behavioral Sciences
Writing Intensive.
Psychological Brain Sciences
AS.200.204. Human Sexuality. 3.0 Credits.
Course focuses on sexual development, sexuality across the lifespan, gender identity, sexual attraction and arousal, sexually transmitted disease, and the history of commercial sex workers and pornography. Please note that the use of electronic devices is not permitted during this class, in order to promote the full interactive potential of this engaging seminar-style offering. Open to Juniors & Seniors within the following majors/minors: Behavioral Biology; Biology; Cognitive Science; Medicine, Science & the Humanities; Molecular & Cellular Bio; Neuroscience; Psychological & Brain Sciences; Public Health; Sociology; Study of Women, Gender, & Sexuality.
Corequisites: Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester.
Instructor(s): C. Kraft
Area: Social and Behavioral Sciences.

German Romance Languages Literatures
AS.211.318. Women in Pre-Modern French Literature. 3.0 Credits.
This course will examine the changes in the relationship of women to literature in France up to the French Revolution from several points of view: (1) What were the social and intellectual contexts of gender distinctions? (2) How did men writing about women differ from women writing about women? (3) How were these questions affected by the changing norms of literary production? Texts by Marguerite de Valois, Mme. de Sévigné, Molière, Mme. de Lafayette, Prévost, Diderot, Rousseau, Mme d’Épinay and Revolutionary memorialists
Instructor(s): W. Anderson
Area: Humanities
Writing Intensive.

AS.211.331. Vagabonds and Ramblers: Space & Place in Women’s Cinema. 3.0 Credits.
In recent times in Italy, a new generation of women filmmakers has found its own space in the traditionally male dominated film industry. This "counter cinema" abounds with female city walkers, migrants, vagabonds and other types of urban nomads, whose movement through space signifies a quest for freedom, gestures of protest and rebellion, and a search for place. We start by looking at the work of a pioneer filmmaker such as Elvira Notari, the first woman director in Italy, and then discuss the issue of gender and space in contemporary films by directors Francesca Comencini, Alice Rohrwacher, and Eleonora Danco. To enrich the analysis, we shall also examine films directed by non-Italians who deal with the theme of women's mobility and their centrality/marginality from different socio-geographic contexts. Other directors included will be Agnès Varda (France), Chantal Akerman (Belgium), Haifa al-Mansour (Saudi Arabia), and Xiaolu Guo (China) Readings will include essays by Laura Mulvey, Ann E. Kaplan, Linda Williams, and Patricia White.
Instructor(s): L. Di Bianco
Area: Humanities.

AS.211.364. Drama Queens: Opera, Gender, and the Poetics of Excess. 3.0 Credits.
What is a drama queen? According to the Oxford English Dictionary, a drama queen is "a person who is prone to exaggeratedly dramatic behaviour" and "a person who thrives on being the centre of attention." While drama queens exist among us, the world of opera is certainly one of their ideal environments. Echoing back to their tragic fates, the powerful voices of Dido, Medea, Violetta, and Tosca never ceased to affect their empathetic public. In fact, excess and overreactions are two main features of the operatic experience both on stage and in the audience. By focusing on the ways in which operatic characters are brought to life, the course explores the social, political, and gender dynamics that inform the melodramatic imagination. Students will have the opportunity to attend live HD broadcasts of Verdi’s La Traviata and Tchaikovsky’s Eugene Onegin from the Metropolitan Opera. No musical skills required.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.211.400. Topics in Romance Literatures. 3.0 Credits.
This year’s "Topics in Romance Literatures" course is entitled “Voicing the Body: Sex and Desire in Medieval Poetry.” If you think that medieval poetry is all about idealized love and spiritual sublimation, then this course will make you change your mind. We will explore works and authors from all across Europe, from the erotic “Carmina burana” to the voluptuous poetry of French troubadours and trouvères, from German love poetry to the sensual songs of Spain and the passionate verses of Italian poets such as Dante and Petrarch. The course will explore the ways in which medieval poets sing about bodily passions and voice the lovers’ desire, with a special focus on the ways in which poetry interacted with music and was transmitted through music. The class is taught in English and all readings will be available in English. Students in Romance Languages (Italian, French, Spanish), depending on their language skills, will have the opportunity to work on the originals. A special reading list will be set up for graduate students who will take the course.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.212.362. Ecrire l’héroïsme au féminin [Writing Heroism in the Feminine]. 3.0 Credits.
How can we define a heroine? What distinguishes heroines from mere female protagonists? Who are the main heroines to have marked the French literary tradition? This course explores the ways in which opera interacted with music and was transmitted through music. The class is taught in English and all readings will be available in English. Students in Romance Languages (Italian, French, Spanish), depending on their language skills, will have the opportunity to work on the originals. A special reading list will be set up for graduate students who will take the course.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.212.783. Diderot, Power and Representation.
A reading of some of Diderot's major works in light of his struggle to break out of imposed and self-imposed hierarchies of style and manner, and to reframe or reform radically the relationship between ethics, politics, sexuality, gender and the arts. Special emphasis on Diderot's self-representation as arbiter of taste, mediator and mentor.
Instructor(s): E. Russo
Area: Humanities
Writing Intensive.
AS.213.310. Classic German Theater. 3.0 Credits.
Taught in German. In this seminar we will read some of the most important plays of German literature, by Lessing, Goethe, Schiller, Kleist, and Büchner. We will explore questions about the role of the theater toward the education of mankind in the spirit of the enlightenment. We will examine how tragedy is reconfigured around the context of the bourgeois family. We will study historical practices of stage production as well as modern filmic and theatrical productions. Finally, we will prepare an informal staging of a play.
Prerequisites: AS.210.361
Instructor(s): K. Pahl.

AS.213.318. The Making of Modern Gender. 3.0 Credits.
Taught in English. Gender as we know it is not timeless. Today, gender roles and the assumption that there are only two genders are diligently contested and debated. With the binary gender system thus perhaps nearing its end, we might wonder if it had a beginning. In fact, the idea that there are two sexes and that they not only assume different roles in society but also exhibit different character traits, has emerged historically around 1800. Early German Romanticism played a seminal role in the making of modern gender and sexuality. For the first time, woman was considered not a lesser version of man, but a different being with a value of her own. The idea of gender complementation emerged, and this idea, in turn, put more pressure than ever on heterosexuality. In this course, we will explore the role of literature and the other arts in the making and unmaking of gender.
Instructor(s): K. Pahl
Area: Humanities.

AS.213.321. Bodies and Pleasures. 3.0 Credits.
Taught in English. This course traces a literary history of sexuality from the Middle Ages to contemporary women's writing. We will analyze how sexual pleasure changed over time. In particular, we will discuss what role literature plays in the reproduction and transformation of bodily pleasures. The course explores how the pleasures of bodies are imagined in and through literature, but also whether words are bodies that give pleasure and perhaps even have their own pleasures. Authors discussed will include Boccaccio, Cleland, Rousseau, Schlegel, Kleist, Hoffmann, Novalis, Arnim, Büchner, Freud, Rilke, Kafka, Rich, Foucault, Kristeva, Cixous, Giddens, and Winterson.
Instructor(s): K. Pahl
Area: Humanities.

AS.213.350. Wie wir begehren. 3.0 Credits.
Taught in German. Human desire and sexuality proves of vital concern in German-speaking countries: from the invention by German sexologists of much of the terminology still in use today to the so-called sexual revolution in the late sixties to new perspectives on the topic today. We will study film, fiction and non-fiction. Recommended Background: AS.210.362
Instructor(s): K. Pahl
Area: Humanities.

AS.213.359. Kleist. 3.0 Credits.
Heinrich von Kleist was one of the most intriguing literary figures of the early nineteenth century in Germany. Neither Classicist nor Romanticist, he developed a unique style that combines such different elements as complex rhythmicality, drastic imagery, and philosophical precision. His novellas, plays, and nonfiction prose explore questions of gender, colonialism, the tragic, and of innocence and double dealing. Among the texts we will read together are "The Betrothal in St. Domingo" (Kleist's literary response to the Haitian revolution), "Penthesilea" (the play about lovers who can find each other only in war ends in a splatter scene), and "Marquise of O" (the story of a woman whose father rejects her because she finds herself pregnant, and yet she has no memory of the sexual intercourse that must have led to her current situation). Language of Instruction: German
Prerequisites: Pre-req: AS.210.362
Instructor(s): K. Pahl
Area: Humanities.

AS.213.373. Sex und Macht. 3.0 Credits.
We will discuss postwar and contemporary literature and films that grapple with the effect of unequal power structures on sexual relations. Taught in German.
Instructor(s): K. Pahl
Area: Humanities.

AS.213.668. Kleist.
This seminar will explore the narrative, dramatic, theoretical and quasi-journalistic work of Heinrich von Kleist along two lines of inquiry. We will read his literary experiments as reactions to the major shift in the sex-gender system and the new deployment of sexuality in the eighteenth century. We will discuss his unique role in the production, communication and interpretation of feeling across narrative and theater.
Instructor(s): K. Pahl.

AS.214.171. Freshman Seminar: Witchcraft and Demonology in Renaissance Europe. 3.0 Credits.
Who were the witches? Why were they persecuted for hundreds of years? Why were women identified as the witches par excellence? How many witches were put to death? (Answer: 30-40,000, between about 1400 and 1800.) What traits did European witchcraft share with witch-mythologies in other societies? After the witch-hunts ended, how did "The Witch" go from being "monstrous" to being "admirable" and even "sexy"? Answers are found in history and anthropology, but also in literature, folklore, music, and the visual arts. After an introduction to ancient and medieval witchcraft, we will study European witch-persecution between 1400 and 1800. The second half of the course will concentrate on artistic representations of witches in media ranging from manuscripts to movies, concentrating on Italy, France, Spain, and Germany.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.214.376. Warrior Women from Ancient Times to Game of Thrones. 3.0 Credits.
This course will trace the origins of the warrior woman from ancient times through today's pop culture and reflect on the multiplicity of its social, cultural, and political ramifications.
Instructor(s): J. Gomez
Area: Humanities.
AS.215.353. Women Writing in Latin America: Prose and Poetry by Sor Juana, Mistral, Lisoba, Pizarnik, Castellanos, and other poets. 3.0 Credits.
The first objective of the course is to train students in close reading and analysis of literary texts. The second objective is to read prose and poetry by some of the canonical texts in the Latin American tradition written by women. Taught in English.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.422. Amor y romanticismo en una novela y tres películas. 3.0 Credits.
Prerequisites: AS.210.311 AND AS.210.312
Instructor(s): E. Gonzalez
Area: Humanities.

Sociology
AS.230.154. Freshman Seminar: Gender, Health and Aging. 3.0 Credits.
In this course students will develop an understanding of the ways in which gender structures health and well being through adulthood and later life. The experience of sexual minorities and the intersection of gender with class and ethnicity will also be discussed. Students will be expected to participate actively and lead discussions on specific topics.
Instructor(s): E. Agree
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.223. Housing and Homelessness in the United States. 3.0 Credits.
This course will examine the role of housing, or the absence thereof, in shaping quality of life. It will explore the consequences of the places in which we live and how we are housed. Consideration will be given to overcrowding, affordability, accessibility, and past and existing housing policies and their influence on society. Special attention will be given to the problem of homelessness.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.255. Men and Women in Society. 3.0 Credits.
This course will explore what it means to be male or female through academic writings, fiction, and film. It will examine how genders are defined by individuals, cultures, and institutions, and how those meanings shape everyday life for men and women. Power, inequality, and intersections with race/ethnicity, class, and sexuality will be a primary focus. Theories of gender addressed will include those related to masculinity, social psychology, feminism, and intersectionality. Though the course will primarily consider the United States, gender in other countries and cultures will also be addressed. Cross-listed with WGS.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences.

AS.230.310. Becoming An Adult. 3.0 Credits.
While students may already be personally familiar with the subject matter, the course examines the sociological and psychological dimensions of this demographically dense period known as the transition to adulthood. Emphasizes life course theories of human development through readings of empirical work on adolescence, the transition to college, early employment and early family formation. Attention is paid to the ways class; gender; race and nationality influence the pathways, choices and outcomes of young people. A Statistics/ Sociology background is helpful, but not required.
Instructor(s): S. Deluca
Area: Social and Behavioral Sciences
Writing Intensive.

AS.230.316. African American Family. 3.0 Credits.
This course is an examination of sociological theories and studies of African-American families and an overview of the major issues confronting African-American family life. The contemporary conditions of black families are explored, as well as the historical events that have influenced the family patterns we currently observe. Special attention will be given to social policies that have evolved as a result of the prominence of any one perspective at a given point in time.
Instructor(s): K. McDonald
Area: Social and Behavioral Sciences.

AS.230.324. Gender and International Development. 3.0 Credits.
This course employs a comparative perspective to examine the gendered impact of international development experiences and policies. Students will discuss the historical evolution of how the concept of gender has been constructed, conceptualized, and integrated into international development theory and practice. The course will also examine how greater international development. In particular, we will examine structural theories of poverty reduction, individual theories of power and processes of stratification at the household and family level. Specific issue areas will include the globalization, class and work political participation and social movements. Cross-listed with International Studies (CP, IR). Fulfills Economics requirement for IS GSCD track students only.
Instructor(s): R. Agarwala
Area: Social and Behavioral Sciences.

AS.230.336. Family, Gender and Sexuality in China. 3.0 Credits.
This course examines social changes in China since the beginning of the People’s Republic (1949) through the lenses of family, gender and sexuality. The first half of the course focuses on understanding family institutions, women’s status, gender relations and sexualities in connection with major historical transitions between 1949 and the present. The second half includes readings and discussions around several thematic topics regarding family, gender and sexuality in contemporary China in the broader context of politics, economy, and social norms.
Instructor(s): Y. Dong
Area: Social and Behavioral Sciences
Writing Intensive.
AS.230.370. Housing and Homelessness in the United States. 3.0 Credits.
This course will examine the role of housing, or the absence thereof, in shaping quality of life. It will explore the consequences of the places in which we live and how we are housed. Consideration will be given to overcrowding, affordability, accessibility, and past and existing housing policies and their influence on society. Special attention will be given to the problem of homelessness.
Prerequisites: Students may not have previously taken AS.230.223.
Instructor(s): M. Greif
Area: Social and Behavioral Sciences.

AS.230.388. Sociology of the Family. 3.0 Credits.
Sociological perspectives on contemporary family life, including marriage and divorce, cohabitation, single parenthood, same sex partnerships, children's wellbeing, balancing work and family responsibilities, domestic violence, and government policy toward families.
Instructor(s): A. Cherlin
Area: Social and Behavioral Sciences.

Biophysics
AS.250.351. Reproductive Physiology. 2.0 Credits.
Focuses on reproductive physiology and biochemical and molecular regulation of the female and male reproductive tracts. Topics include the hypothalamus and pituitary, peptide and steroid hormone action, epididymis and male accessory sex organs, female reproductive tract, menstrual cycle, ovulation and gamete transport, fertilization and fertility enhancement, sexually transmitted diseases, and male and female contraceptive methods. Introductory lectures on each topic followed by research-oriented lectures and readings from current literature.
Instructor(s): B. Zirkin
Area: Natural Sciences.

Public Health Studies
AS.280.225. Population, Health and Development. 3.0 Credits.
This course will cover the major world population changes in the past century as well as the contemporary situation and projections for this century. Topics include rapid population growth, the historical and continuing decline of death and birth rates, contraceptive methods as well as family planning and child survival programs, population aging, urbanization, population and the environment and the demographic effects of HIV/AIDS. This course is restricted to Public Health Studies majors. Students minoring in Study of Women, Gender, and Sexuality can register with instructor approval.
Prerequisites: Students who have taken AS.230.225 may not take AS.280.225.
Instructor(s): S. Becker
Area: Social and Behavioral Sciences.

AS.280.422. Health Equity and Disparities: Addressing Complex Global Health Challenges. 3.0 Credits.
In this course, students will be supported and challenged to develop a personal understanding of and perspective on global health equity and disparities, and acquire a toolbox of frameworks and strategies to use in addressing them. Students will have the opportunity to be exposed to numerous examples and case studies to gain experience in assessing and addressing issues of equity in the complex, real–life problems such as those they will be facing as public health professionals. Students will review major historical and contemporary global and national initiatives to address equity issues in the health sector, including global declarations and reports as well as policies and programs that have been developed to achieve improvements in health equity in specific contexts. Application of this historical and practical knowledge and their own perspectives to new and complex situations will be fostered throughout the course. Basic knowledge of biostatistics and epidemiology and courses on global health or international public health issues recommended pre-requisites. Juniors/Seniors Only. Gordis Teaching Fellowship course
Instructor(s): M. Schleiff
Area: Social and Behavioral Sciences.

Behavioral Biology
AS.290.420. Human Sexual Orientation. 3.0 Credits.
This course will examine the historical and current theories of sexual orientation and sexual variation development by examining the biological, psychological and social contributing factors that influence the development of sexual orientations and variations along with treatment and modification of problematic sexual behaviors. Please note that the use of electronic devices is not permitted during this class, in order to promote the full interactive potential of this engaging seminar-style offering. Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester. Enrollment is limited to Senior Majors & Minors in Behavioral Biology; Biology; Cognitive Science; Medicine, Science & the Humanities; Molecular & Cellular Bio; Neuroscience; Psychology; Public Health; Sociology; Study of Women, Gender, & Sexuality.
Corequisites: Students may enroll in both AS.200.204 and AS.290.420, but cannot do so in the same semester.
Instructor(s): C. Kraft
Area: Social and Behavioral Sciences.

Humanities Center
AS.300.133. Freshmen Seminar: Women of Epic Fame in Literature and Drama, 800 BCE-1650 CE. 3.0 Credits.
From Homer's Odyssey to Shakespeare's Antony and Cleopatra, powerful women who achieve their ends by working from within the system are often overlooked or not fully explored. Our readings and discussions will foreground these women of fiction, while we also consider the social conditions of their living contemporaries. Readings will include: Homer’s Odyssey (Penelope); Virgil's Aenead (Dido); Dante’s Inferno (Beatrice); Milton’s Paradise Lost (Eve), and several accounts of Cleopatra in plays by Shakespeare and his contemporary women writers. Cross listed with Theater Arts, Writing Seminars, and WGS.
Instructor(s): T. Tower
Area: Humanities
Writing Intensive.
Comparative Thought and Literature

AS.300.312. Imagining Revolution and Utopia. 3.0 Credits.
What form should revolution take, and what should society look like after the revolution? What would happen to the state, family, home, status of women, human interrelations, and everyday life? These questions consumed radicals in 19th century Russia and Europe, and their answers helped to shape the political culture of the 20th century. This course examines theories of revolution and utopia and responses to them in literature, art and film. Primary case study is Russia and the Soviet Union, with a comparative look at influential European works.
Instructor(s): A. Eakin Moss
Area: Humanities
Writing Intensive.

Humanities Center

AS.300.317. The Russian Novel. 3.0 Credits.
Russian authors began writing novels in the shadow of counterparts in Western Europe, and thus had the chance to experiment with the form and scope of genres and themes they found in European literature. Alexander Pushkin’s novel in verse Eugene Onegin pays homage to Byron’s Don Juan and satirizes Richardson’s Pamela; Mikhail Lermontov’s nested stories A Hero of Our Time owes a debt to Romantic and gothic fiction, and Nikolai Gogol’s Dead Souls brings Dante’s Inferno to the Russian provinces. From these literary forefathers emerged the likes of Feodor Dostoevsky and Leo Tolstoy, who made a lasting impact on world literature with their psychological and philosophical novels. This course examines the Russian novel in its historical and cultural context alongside contributions of Russian literary criticism in defining novel form and genre.
Area: Humanities
Writing Intensive.

Comparative Thought and Literature

AS.300.320. Lover’s Discourse. 3.0 Credits.
Much of what we know about love and desire we owe to fiction’s ability to evoke these experiences. Consider for example that the publication, in Germany, of The Sorrows of Young Werther inspired young men across Europe to dress and behave just like him. We will study in this course a selection of love stories chosen because they break the mold and question their conventions. Taking a critical distance from these tales of seduction, we will examine not only the manifestations and meanings of love, but also the configurations of gender they inspire and reflect. Indeed, just as nowadays film and television represent, as well as mold, our identities as desiring subject, fictions from the eighteenth-century onwards have shaped our current understanding of gendered subjectivities. The readings for this seminar (all available in English) include: Austen, “Persuasion”; Balzac, “The Girl with the Golden Eyes” and “Sarrasine”; Barthes, “Lover’s Discourse”; Goethe, “The Sorrows of Young Werther”; Mann, “Death in Venice”; Rousseau, excerpts from “Julie or The New Heloise”; Sulzer, “A Perfect Waiter”, Winterson, “Written on the Body”.
Instructor(s): E. Ender
Area: Humanities

Humanities Center

AS.300.324. Cinema of the 1930s: Communist and Capitalist Fantasies. 3.0 Credits.
Comedy and musical comedy film flourished in the USA during the Great Depression as well as in the USSR during the Stalinist Great Terror. This course will compare films of the era in a variety of genres (musical, epic, Western, drama), examining the intersections between politics and aesthetics as well as the lasting implications of the films themselves in light of theoretical works on film as a medium, ethics and gender.
Instructor(s): A. Eakin Moss
Area: Humanities.

AS.300.363. Reading Judith Shakespeare: poetry and drama by women writers in Elizabethan England (ca 1558-1650). 3.0 Credits.
Virginia Woolf’s account of the thwarted career of Shakespeare’s hypothetical sister, Judith (in A Room of One’s Own) frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, Mary Wroth, and others. Students will create fictional biographies of “Judith Shakespeare” and her literary accomplishments. Cross listed with English, Theater Arts, Writing Seminars, and WGS.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

AS.300.365. Desire in the Fin de siècle. 3.0 Credits.
This course examines the obsession with desire at the turn of the 20th century in literature, drama, philosophy and social thought and its implications for notions of self and community in modernity. We will read comparatively across European, Russian and American cultures, including Stoker’s Dracula, Hamsun’s Hunger, plays by Chekhov, Strindberg, Ibsen, Wilde, and stories by Tolstoy, Gorky, Chopin and Larsen.
Instructor(s): A. Eakin Moss
Area: Humanities
Writing Intensive.

AS.300.371. The Modernist Novel: James, Woolf, and Joyce. 3.0 Credits.
The purpose of this course is to survey works by three of the greatest, most relentless innovators of the twentieth century – Henry James, Virginia Woolf, and James Joyce – who explored and exploded narrative techniques for depicting what Woolf called the “luminous halo” of life. Selected works include: “The Beast in the Jungle,” The Portrait of a Lady, Jacob’s Room, Mrs. Dalloway, To the Lighthouse, A Portrait of the Artist as a Young Man, and Ulysses.
Instructor(s): Y. Ong
Area: Humanities.

Comparative Thought and Literature

AS.300.372. Dance and the Russian Avant-Garde. 3.0 Credits.
This course will explore the relationship between art and dance during the explosion of artistic creativity at the time of the Russian Revolution (1900s-1920s) as well as the influence of the Russian Avant-Garde on modern dance and theories of movement through the 20th century. We will examine how dance both gave physical form to aesthetic, philosophical and political ideas and catalyzed new forms of thinking about the human body and modern spaces. Lecture and discussion of readings and screenings will be paired with a weekly movement workshop in the dance studio that will introduce students to different forms and theories of avant-garde and modernist dance and movement theory. No prior dance experience or knowledge of Russian is required.
Instructor(s): A. Eakin Moss; C. Dinapoli
Area: Social and Behavioral Sciences.
East Asian Studies
AS.310.115. Ghost Tales from China and Japan, 14th-19th Centuries. 3.0 Credits.
We cannot express our own experience of death – only imagine life after death. How did people in the past conceptualize the world of the dead? Ghost tales will teach us what we imagine as the experience of dead and life after death. This course aims to introduce students to a variety of ghost stories in Late Imperial China and Tokugawa Japan and connect their literary imagination of the dead to the cultural, socio-historical, and religious context of each society as well as to the broad East Asian tradition of supernatural narratives. While we also touch upon earlier traditions on narrating the dead, most of the stories in class readings are from the Ming (1368-1644) and Qing (1644-1911) dynasties of China, and the Tokugawa period (1600-1868) of Japan. Key issues include family, gender, sexuality, body, medicine and many more. Although we will also take a look at visual and theatrical representations of the dead, we will primarily focus on literary texts about ghostly phenomena. Film screenings required. All readings are in English.
Instructor(s): F. Joo
Area: Humanities

AS.310.310. Shamans, She-Devils, and Pilgrims: Women & Gender in East Asian Religions. 3.0 Credits.
This course examines the complexities of gender and the role that women have played in the religions of China, Korea, and Japan. It explores two main types of content: 1) religious discourse on women and gender through doctrines, scriptures, narratives, myths, and legends; and 2) the practices, beliefs, and lives of real women through historical cases, including those of nuns, laity, sovereigns and family members. Organized in chronological order, the course begins with early sources across East Asia and finishes in contemporary times. Readings and assignments emphasize the analysis of primary sources, complemented by secondary works for historical and cultural context. Students will end the course with a research paper focused on a topic of their choice.
Instructor(s): C. Carter
Area: Humanities
Writing Intensive.

Center for Africana Studies
AS.362.340. Power and Racism. 3.0 Credits.
This course investigates the impact of white supremacy and anti-black racism, as a global system of power, on the political development of the United States of America.
Instructor(s): F. Hayes
Area: Social and Behavioral Sciences
Writing Intensive.

Theatre Arts and Studies
http://krieger.jhu.edu/theatre-arts
The program offers a comprehensive approach to the arts of acting, directing, playwriting, and theatre history, along with the fundamentals of technical direction, play production, play analysis, and theatre management.

For those students who intend to prepare for a career in the theatre, the courses offered are taught exclusively by established professionals with experience on Broadway, in the best of regional theatres, and in many countries of the world.

For those students not focused on a career in theatre arts, the courses offer a broader perspective, an understanding of societal traditions and culture, and an appreciation for the arts, whether theatrical, literary, musical, or visual. Students pursuing careers in medicine, engineering, law, international relations, science, and others have been challenged and enriched by the school's courses in theatre arts.

For those who seek careers in the arts, the acting and directing workshops, playwriting courses, and independent study opportunities provide rigorous training in acting and other theatre crafts, as well as an appreciation for and an understanding of the history of dramatic arts, its cultural significance, and the industries it has produced.

Located in the program's home, the historic Merrick Barn, The Johns Hopkins University Theatre provides a vehicle for the fulfillment of student lab requirements. The University Theatre produces several plays each year in the John Astin Theatre and occasionally in the Meyerhoff Auditorium at the Baltimore Museum of Art, which adjoins the Homewood campus. Classes are also held in the Barn.

Theatre Arts and Studies Minor
All courses for the minor here must be taken for letter grades and receive a grade of C- or higher. Courses taken at another institution may not apply towards the minor without permission of the Director of Undergraduate Studies.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>AS.225.100</td>
<td>Introduction to Theatre</td>
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<tr>
<td>or AS.225.300</td>
<td>Contemporary Theatre &amp; Film</td>
<td>3</td>
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<tr>
<td>AS.225.301</td>
<td>Acting I</td>
<td>3</td>
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<td>AS.225.302</td>
<td>Acting II</td>
<td>3</td>
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<tr>
<td>AS.220.105</td>
<td>Fiction/Poetry Writing I</td>
<td>3</td>
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<tr>
<td>One theatre history course</td>
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<td>One drama course in other program *</td>
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<td>One additional theatre course **</td>
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<td><strong>Total Credits</strong></td>
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* Courses are identified by the POS-Tag THEA-DRAMA. Alternatively, another theatre history course from within the program (not counted towards another requirement) may apply towards this requirement with permission of the director of undergraduate studies.

** This course may be an acting, theatre production, playwriting, or theatre history course.

For current faculty and contact information go to http://krieger.jhu.edu/theatre-arts/people/

Faculty
Director
John Astin
Homewood Professor (Dramatic Arts), Writing Seminars: acting, directing, theatre history, production and management.

Professor Emeritus
Richard A. Macksey
Professor Emeritus

Decker Professor in the Humanities, Writing Seminars
John T. Irwin
Decker Professor in the Humanities, Writing Seminars: criticism and poetry in the theatre.

Professor
Ronald Walters
Professor, History: American cultural and social history.
Visiting Instructors
Margaret (Peg) Denithorne
Instructor: acting, directing, theatre history.

James Glossman
Instructor: directing, acting, theatre management, theatre history.

Joseph Martin
Instructor: theatre history, dramaturgy.

William Roche
Instructor: technical direction, theatre crafts, theatre management.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
AS.225.100. Introduction to Theatre. 3.0 Credits.
An introduction to the drama: how and why the theatre came into being; its role in human history; and how changing social structures in different regions and epochs have shaped different kinds of theatre, plays and performance. Also: how theatre “works” for us and on us, and the major plays of world drama.
Instructor(s): J. Martin
Area: Humanities.

AS.225.212. Voice and Speech for the Actor. 3.0 Credits.
It has been said that 90% of what an actor does onstage is dependent on being effortlessly heard and understood by their audiences. This course is designed to establish the tools for the actor to begin to create this foundation. Using a combination of both the benchmark texts by Edith Skinner and Kristin Linklater, along with in-class exercises and monologues, we will begin the process of exploring both vocal power through breathing and breath control, and the fundamental tools of clarity in the speaking of a dramatic text onstage.
Instructor(s): J. Glossman
Area: Humanities.

AS.225.215. Performing Musical Theatre. 3.0 Credits.
Effective performance in musical theatre demands a committed analysis of the musical and dramatic values of the song and the libretto from which it springs, in order to develop a fresh, organic interpretation. This course will provide you with the training to both analyze and interpret musical theatre scenes and songs and to make the most of them in performance. Instructor Permission Only.
Instructor(s): M. Denithome
Area: Humanities.

AS.225.218. ANGELS IN AMERICA (The Play) The Millennium Shift in American Culture and Politics. 3.0 Credits.
Tony Kushner's epoch-making play weaves together astonishingly diverse sides of America in a broad tapestry; a modern work that emerged at the end of the 20th Century, now being revived world wide: it provides keys to understanding the American zeitgeist and the coming transformations of the culture. In one pivotal work we find the emergence of LGBT rights, the Mormon Church, the AIDS epidemic, the new “spirituality,” the Reagan-era transformation of both government and business, and the looming figure of Roy Cohn whose influence in American politics “behind the scenes” ranged from the Rosenberg trial to his work as counsel for the McCarthy Committee in the 1950s; and even his legacy in the 2016 as primary political and business mentor of the current President of the United States.
Instructor(s): J. Martin
Area: Humanities, Social and Behavioral Sciences.

AS.225.300. Contemporary Theatre & Film. 3.0 Credits.
An introduction to the performing arts, including an overview of theatre history, acting styles and the interaction of art and society. A personal view from inside.
Instructor(s): J. Astin
Area: Humanities.

AS.225.301. Acting I. 3.0 Credits.
An introduction to the fundamentals of acting through exercises, improvisation, and work on scenes from established plays and Shakespearean sonnets, based on the teachings of Stanislavsky, Greet, Boleslavsky, Michael Chekhov, Clurman, and Meisner. This course also includes a brief survey of major playwrights. Plays will be read, analyzed, and employed in scene work.
Instructor(s): J. Astin
Area: Humanities.

AS.225.302. Acting II. 3.0 Credits.
As in Workshop I, the principal classroom activities will consist of scene work, exercises, lectures, and discussion. Some rehearsal will also take place during school hours. It is expected that substantial out-of-class time be spent on rehearsals and exercises. Recommended Course Background: AS.225.301
Instructor(s): J. Astin
Area: Humanities.

AS.225.303. Acting III. 3.0 Credits.
Special attention is given to the development of spontaneity and emotional freedom using the principles of Workshops I and II. Hands on work with John Astin’s “The Process” and the second Silverberg workbook are employed, along with the Uta Hagen text. Boleslavsky and Michael Chekhov are introduced. The Clurman, Meisner, Stanislavsky and Strasberg approaches are included. Substantial out of class time is required. Recommended Course Background: Two acting courses.
Instructor(s): J. Astin
Area: Humanities.

AS.225.307. Directing Seminar. 3.0 Credits.
Fundamentals of mounting, casting and staging the play; various theories of directing; students must commit to a practical lab. It is understood that students have a working familiarity with acting fundamentals.
Instructor(s): J. Glossman
Area: Humanities.

AS.225.308. Shakespeare in Performance. 3.0 Credits.
Students will work with a selection of Shakespeare’s plays --- A MIDSUMMER NIGHT’S DREAM; MERRY WIVES OF WINDSOR; and KING LEAR --- in exploring specific ways in which the power of the lines can be translated dynamically and immediately into vocal and physical performance. This course can be repeated for credit, because it covers different topics. (Some background in the acting sequence is encouraged).
Instructor(s): J. Glossman
Area: Humanities.

AS.225.310. Stagecraft. 3.0 Credits.
A hands-on approach to the technical and theoretical elements of production. Meets in the Merrick Barn Scene Shop. Permission Required.
Instructor(s): W. Roche
Area: Humanities.
AS.225.311. Scene Study. 3.0 Credits.
Classes and scenes tailored to the needs of the actors. Some rehearsal will take place during school hours. It is expected that substantial out-of-class time be spent on rehearsals and exercises.
Instructor(s): J. Astin
Area: Humanities.

AS.225.314. Theatre: Tech Direction. 3.0 Credits.
An introduction to Technical Direction including pre-production and production with an overview of materials, tools, rigging and safety, together with design and its implementation.
Instructor(s): W. Roche
Area: Humanities.

AS.225.315. Scene Study 2. 3.0 Credits.
Classes and scenes tailored to the needs of the actors. Some rehearsal will take place during school hours. It is expected that substantial out-of-class time be spent on rehearsals and exercises.
Instructor(s): J. Astin
Area: Humanities.

AS.225.320. Performance. 3.0 Credits.
The student is given specific acting assignments, and develops them as special projects for public performance under the direct supervision of the instructor. A professional level performance is the goal. Audition Required. Out of class rehearsal time required. Permission only, signature required.
Instructor(s): M. Denithorne
Area: Humanities.

AS.225.321. The Lab - The Actor/Director/Playwright Lab. 3.0 Credits.
Student actors, directors, and playwrights will explore their respective crafts with emphasis on process and individual artistic growth. Participants in the class will also collaborate on the creation of new material for the stage. Recommended Course Background: one course in Acting, Directing, or Playwriting.
Instructor(s): M. Denithorne
Area: Humanities.

AS.225.323. Design for the Stage. 3.0 Credits.
The fundamentals of stage design, with an emphasis on process, including script analysis, research, conceptualization, and implementation, from the first reading of the play to opening night, along with an overview of theatre architecture from the Greeks to the current day and into our imagined future.
Instructor(s): W. Roche
Area: Humanities.

AS.225.324. Adaptation for the Stage. 3.0 Credits.
For aspiring playwrights, dramaturgs, and literary translators, this course is a workshop opportunity in learning to adapt both dramatic and non-dramatic works into fresh versions for the stage. Students with ability in foreign languages and literatures are encouraged to explore translation of drama as well as adaptation of foreign language fiction in English. Fiction, classical dramas, folk and fairy tales, independent interviews, or versions of plays from foreign languages are covered.
Instructor(s): J. Martin
Area: Humanities
Writing Intensive.

AS.225.328. The Existential Drama: Philosophy and Theatre of the Absurd. 3.0 Credits.
Existentialism, a powerful movement in modern drama and theatre, has had a profound influence on contemporary political thought, ethics, and psychology, and has transformed our very notion of how to stage a play. Selected readings and lectures on the philosophy of Kierkegaard, Nietzsche, Camus and Sartre -- and discussion of works for the stage by Sartre, Ionesco, Genet, Beckett, Albee, Pinter, Athol Fugard (with Nkani & Nshone), Heiner Müller and the late plays of Caryl Churchill. Opportunities for projects on Dürenmatt, Frisch, Havel, Witkiewicz, and Mrozek.
Instructor(s): J. Martin
Area: Humanities
Writing Intensive.

AS.225.329. Acting and Directing Musical Theatre. 3.0 Credits.
Musical Theatre is a unique form of theatrical expression that requires special skills of its actors and directors. In this course, students will study the form and structure of musicals as they apply to acting and directing. Students will direct and perform musical numbers as well as book scenes from classic and contemporary American musicals.
Instructor(s): M. Denithorne
Area: Humanities.

AS.225.330. Playwriting Strategies. 3.0 Credits.
A seminar and workshop in playwriting with Dr. Joe Martin, playwright and dramaturge. Student writers, developing their plays, will learn how to open up to the creative process, “brainstorm,” refine their work, and shape it toward an act of artistic communication. Writer's techniques, such as attending to plot or “story,” delineation of character, creating effective “dialog,” even overcoming “writer's block,” will be addressed. This course is designed to be complementary to – not a replacement for – playwriting classes in the Writing Seminars.
Instructor(s): J. Martin
Writing Intensive.

AS.225.333. Scene Study 3. 3.0 Credits.
Classes and scenes tailored to the needs of the actors. Some rehearsal will take place during school hours. It is expected that substantial out-of-class time be spent on rehearsals and exercises.
Instructor(s): J. Astin
Area: Humanities.

AS.225.339. Exploring The Major Plays of Anton Chekhov. 3.0 Credits.
This is an advanced class for actors who are interested in delving into the "world of the play." Students will work on scenes from the four major plays of Anton Chekhov. We will also explore some modern adaptations including VANYA, SONIA, MASHA, and SPIKE.
Prerequisites: AS.225.301 AND AS.225.302 or permission of the instructor
Instructor(s): M. Denithorne
Area: Humanities.

AS.225.345. History of Modern Theatre & Drama. 3.0 Credits.
Designed to impart a deepened appreciation and understanding of today's theatre by surveying the major playwrights, historical movements, and theatre practices of the 20th century. The course also seeks to help students understand theatre’s relationship to the societal and political power structure of each era and to introduce students to great dynamic literature in its intended form, which is performance.
Instructor(s): M. Denithorne
Area: Humanities
Writing Intensive.
AS.225.346. Creative Improvisation: For Theatre and for Life. 3.0 Credits.
An exploration of the imagination and the senses using basic techniques of improvisation: exercises, conflict resolution, ensemble building, and theatre games. Texts: Spolin, Johnstone, LaBan and Feldenkreis. Open to all students.
Instructor(s): M. Denithorne
Area: Humanities.

AS.225.501. Independent Study. 1.0 - 3.0 Credits.
Permission only.
Instructor(s): J. Astin; J. Glossman; J. Martin; M. Denithorne.

AS.225.502. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): J. Astin, J. Glossman; J. Martin; M. Denithorne.

AS.225.520. Projects in Theatre. 3.0 Credits.
Special projects created for and tailored to the individual theatre student. Enrollment limited. Permission Required.
Instructor(s): J. Astin.

AS.225.590. Summer Internship in Theatre. 1.0 Credit.
Instructor(s): J. Astin.

AS.225.599. Independent Study. 3.0 Credits.
Instructor(s): J. Astin.

Cross Listed Courses
German Romance Languages Literatures
AS.211.312. Acting French: learning about French culture and language through theater. 3.0 Credits.
Performing a play in a foreign language not only improves language skills, but develops the ability to express oneself through the body and to communicate both efficiently and elegantly. Using excerpts from popular French stage plays by Camus, Sartre, Feydeau, Ionesco, Pagnol and Rostand among others, this course aims to help students to 1) improve French pronunciation, intonation, syntax, and vocabulary; 2) appreciate and understand linguistic nuance and socio-cultural practices; 3) learn fundamentals of acting that carry over into everyday communication, from body language and vocal projection to the expression of emotion and improvisation. Students will view filmed representations of select plays as well as present an end-of-semester staging. Recommended course background: AS.210.301.
Instructor(s): K. Cook-Gailloud; M. Alhinho
Area: Humanities.

Humanities Center
AS.300.113. Freshmen Seminar: Drama and Gender in Shakespeare's England. 3.0 Credits.
In this seminar we will read male and female authored plays and discuss how they reflect contemporary social expectations in Tudor and Stuart England. Authors include William Shakespeare; Mary Sidney, Countess of Pembroke; Christopher Marlowe; Elizabeth Cary; Ben Jonson; and Mary Sidney, Lady Wroth.
Instructor(s): E. Patton
Area: Humanities.

AS.300.133. Freshmen Seminar: Women of Epic Fame in Literature and Drama, 800 BCE-1650 CE. 3.0 Credits.
From Homer's Odyssey to Shakespeare's Antony and Cleopatra, powerful women who achieve their ends by working from within the system are often overlooked or not fully explored. Our readings and discussions will foreground these women of fiction, while we also consider the social conditions of their living contemporaries. Readings will include: Homer's Odyssey (Penelope); Virgil's Aenead (Dido); Dante's Infeno (Beatrice); Milton's Paradise Lost (Eve), and several accounts of Cleopatra in plays by Shakespeare and his contemporary women writers. Cross listed with Theater Arts, Writing Seminars, and WGS.
Instructor(s): T. Tower
Area: Humanities
Writing Intensive.

Comparative Thought and Literature
AS.300.353. Present Mirth: Stages of Comedy. 3.0 Credits.
A comparative survey of presentational comedies from Aristophanes to Beckett on stage and screen, with some attention to the vexed question of theories of comedy [no laughing matter].
Instructor(s): R. Macksey
Area: Humanities
Writing Intensive.

Humanities Center
AS.300.363. Reading Judith Shakespeare: poetry and drama by women writers in Elizabethan England (ca 1558-1650). 3.0 Credits.
Virginia Woolf's account of the thwarted career of Shakespeare's hypothetical sister, Judith (in A Room of One's Own) frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, Mary Wroth, and others. Students will create fictional biographies of "Judith Shakespeare" and her literary accomplishments. Cross listed with English, Theater Arts, Writing Seminars, and WGS.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

Visual Arts
http://krieger.jhu.edu/visualarts/

The Center for Visual Arts provides a studio environment in which undergraduates can pursue their creative interests and earn academic credit in a visual arts program. Art classes allow students to enrich their lives, while diversifying and broadening their educational experience. The Center for Visual Arts (formerly Homewood Art Workshops) provides a studio environment in which undergraduates can pursue their creative interests. The arts teach people to look at reality from different angles. They teach creativity, which is applicable and valuable in every avenue of human endeavor. They teach skills, including perceptual skills, which actually improve the process of thinking and reasoning. In fact, the ability to be flexible in the interpretation of data is a key component of success in research, and making art helps students develop exactly this sort of cognitive flexibility.

Courses in drawing, painting, printmaking and sculpture develop observational skills and techniques in the beginning student. Courses in photography, cartooning, and digital media balance studio work with research and critical analysis. Although there is currently no major, students can earn a minor in visual arts. For the minor in visual arts, students may focus on either traditional studio courses or a digital curriculum, or they can combine the two tracks for a more diverse experience. Students wishing to take more advanced fine arts courses
are encouraged to take advantage of Hopkins’ cooperative programs with other colleges in the Baltimore area.

**Visual Arts-Minor**

Students may focus on one of two tracks: (1) traditional studio courses or (2) a digital curriculum. They have the option to combine the two tracks for a more diverse, if more general, experience.

A minimum range of 15 to 18 credits, including:

- **Core Course**
  - AS.371.131  Studio Drawing I  2
  - or AS.371.152  Introduction to Digital Photography

- **Art History Course**
  - One course at any level in history of art  3-4

- **Visual Arts Electives**
  - Four additional visual arts courses  10-12

  **Total Credits**  15-18

**Additional details:**

- Students may count as many as two visual arts courses taken at MICA, but not offered at Hopkins, toward the minor. These courses must be approved in advance by the advisor.
- All courses must be taken for a letter grade and students must receive a grade of C- or better to apply the course towards the minor.
- One independent study course in the visual arts may be counted toward the minor.
- One visual arts course, not offered at Hopkins, taken in a JHU-affiliated study abroad program may be counted toward the minor.
- Each student’s complete program of study must be approved by the advisor.
- Advising will be done by the Director (Studio) and the Photography Coordinator (Digital).

For current faculty and contact information go to http://www.jhu.edu/artwork/faculty.htm

**Courses**

**AS.371.131. Studio Drawing I. 2.0 Credits.**

This course focuses on developing fundamental drawing skills for the student with little or no previous studio experience. Basic concepts of form and composition will be taught through exercises based on the book, Drawing On The Right Side Of The Brain, and with the aid of still life setups and live models. Attendance at 1st class is mandatory. Approval for this course will be considered after enrollment in SIS; no need to email.

**Instructor(s): Staff.**

**AS.371.133. Oil Painting I. 2.0 Credits.**

This course offers the fundamentals of oil painting techniques for the serious student with minimal prior studio experience. Observational skills are taught through the extensive use of still-life setups, with particular attention paid to issues of light, color, and composition. Slide lectures and a museum trip give students an art historical context in which to place their own discoveries as beginning painters. Approval for this course will be considered after enrollment in SIS; no need to email.

**Prerequisites: (AS.371.131 or equivalent) or instructor’s permission.**

**Instructor(s): C. Hankin.**

**AS.371.134. Oil Painting II. 2.0 Credits.**

Students who have mastered basic painting skills undertake sustained projects, including portrait and plein air landscape work. Slide lectures and handouts deepen students’ appreciation of representational traditions. Advanced techniques, materials, and compositional issues are also investigated. Recommended Course Background: AS.371.133 or equivalent. Approval for this course will be considered after enrollment in SIS; no need to email.

**Prerequisites: Prereq: AS.371.133 or permission of the instructor.**

**Instructor(s): B. Gruber.**

**AS.371.135. Studio Drawing II. 2.0 Credits.**

Building on basic drawing skills, this course explores various media, techniques, and compositional elements with special emphasis on still life, portrait, and life drawing. A visit to the Baltimore Museum of Art’s Print & Drawing Library supplements lectures and enriches the student’s understanding of the history of artists’ drawings. Recommended Course Background: AS.371.131 or instructor’s permission.

**Instructor(s): C. Hankin.**

**AS.371.136. Drawing: The Portrait. 2.0 Credits.**

An intensive look at the traditions and techniques of portrait drawing. Students work from live models in a variety of media and study master portraits by Holbein, Rembrandt, Ingres, Degas, etc. Trips to the Baltimore Museum of Art Print & Drawing Room and JHU Archaeological Museum will enhance knowledge and appreciation of the history and traditions of portraiture. Recommended Course Background: AS.371.131 or permission required.

**Instructor(s): C. Hankin.**

**Faculty**

**Director**
Margaret Murphy
Instructor: painting and drawing.

**Instructor**
D. S. Bakker
Aesthetics, visual philosophy, Surrealism.

Phyllis Berger
Photography Supervisor: photography, artists’ books, documentary photography.

Cathy Goucher
Art therapy, non-traditional materials and techniques

Thomas Chalkley
Sequential imagery, political and social satire, popular culture.

Howard Ehrenfeld
Digital photography and imaging, location photography.

Barbara Gruber
Figure painting, plein air landscape.

Suzanne Kopf
Watercolor, mixed media

Larcia Premo
Sculpture, printmaking.

For current course information and registration go to https://sis.jhu.edu/classes/
AS.371.139. Still Life/Interior/Landscape. 2.0 Credits.
This intermediate drawing class will examine three grand traditions in representational art. We will explore problems in still life that have occupied artists from Chardin to Morandi; in interiors from Vermeer to Giacometti; in landscape from Corot to Diebenkorn. We will also look at where the boundaries between these genres blur and how they overlap. Instructor(s): C. Hankin.

AS.371.140. Cartooning. 3.0 Credits.
Not open to Freshmen. A history-and-practice overview for students of the liberal arts. The conceptual basis and historical development of cartooning is examined in both artistic and social contexts. Class sessions consist of lecture (slides/handouts), exercises, and ongoing assignments. Topics include visual/narrative analysis, symbol & satire, editorial/political cartoons, character development, animation. Basic drawing skills are preferred but not required. Instructor(s): T. Chalkley
Area: Humanities.

AS.371.147. Design Studies: Art of Architecture. 3.0 Credits.
In this course, students will learn to design, draw, and see like an architect. A series of progressive design exercises will teach the practical capacities and habits of mind that lead not merely to competence but success and advancement in the field. We will look at what architecture has been, discuss what it is becoming, and explore both formal and narrative methodologies for design. The class will use the built environment of the city - and the Homewood campus - as a classroom and a site for interpretive drawing and creative design work. Essential in the architect's education is the sketchbook, which functions not merely as a place to 'store' what has been witnessed, but a place to interpret and explore implications of design in the world, whether close to home or traveling in exotic locales. Instructor(s): C. Phinney
Area: Humanities.

AS.371.149. Visual Reality. 3.0 Credits.
In art, "Realism" is a simulation of visual reality. But art can also simulate alternative realities, those realities or truths which exist only in daydreams or nightmares. In this class, we will learn to explore and create representations of these additional moments of existence. This will require thinking creatively or "outside the box," a useful skill in any field. Using a variety of media, students are asked to solve problems to which there is no one correct answer. Instructor(s): D. Bakker
Area: Humanities.

AS.371.150. Life Drawing. 2.0 Credits.
An intermediate drawing course focusing on all aspects of the human form. Beginning with infrastructure (skeletal and muscular systems), we will work directly from the model using a variety of media and techniques to address problems in figurative art from the Renaissance to the present. Prerequisites: Prereq: AS.371.131 or instructors permission. Instructor(s): C. Hankin.

AS.371.151. Photoshop/Digital Darkroom. 3.0 Credits.
Photoshop is not only the digital darkroom for processing images created with digital cameras; it is also a creative application for making original artwork. In this course, students use Photoshop software as a tool to produce images from a fine art perspective, working on projects that demand creative thinking while gaining technical expertise. Students will make archival prints, have regular critiques, and attend lectures on the history of the manipulated image and its place in culture. We will look at art movements which inspire digital artists, including 19th-century collage, dada, surrealism, and the zeitgeist of Hollywood films. Students must have a digital SLR camera. Prior knowledge of Photoshop is not required. Attendance at first class is mandatory. Approval for this course will be considered after enrollment on SIS; no need to email. Instructor(s): H. Ehrenfeld
Area: Humanities.

AS.371.152. Introduction to Digital Photography. 3.0 Credits.
Students learn to use their digital cameras through a variety of documentary, landscape and portrait projects, which will help them develop technical and creative skills. Critiques and slide lectures of historic photographs, which range from postmortem daguerreotypes to postmodern digital imagery, help students develop a personal vision. Students are provided digital SLR cameras and gain proficiency with one-on-one instruction in the field. Basics for print adjustment and output will be covered. Attendance at first class is mandatory. Approval for this course will be considered after enrollment on SIS; no need to email. Instructor(s): G. Salazar, H. Ehrenfeld
Area: Humanities.

AS.371.154. Introduction to Watercolor. 2.0 Credits.
Watercolor is simultaneously the most accessible of all painting media and the most misunderstood. This course provides experience and instruction in observational and expressive watercolor techniques, materials, concepts, and vocabulary. Topics to be reviewed include line, perspective, value, texture, composition, color, and pictorial space. There will be an introduction to contemporary practices in watercolor, as well as experimental and abstract exercises, collage, and conceptual work. Instructor(s): S. Kopf.

AS.371.155. Introduction to Sculpture. 2.0 Credits.
A studio course introducing students to sculptural concepts and methods. Emphasis is on the process of creating. Even the simplest materials can effectively activate space, convey meaning, and elicit emotion when used thoughtfully and imaginatively. Students will learn different methods including additive and reductive techniques, construction, modeling, and mold-making. No prerequisites except a willingness to experiment, make mistakes... and clean up when you are done. Seniors only or permission required. Instructor(s): L. Premo.

AS.371.162. Black and White: Digital Darkroom. 3.0 Credits.
In this digital course, students explore the black-and-white aesthetic. They develop camera skills on numerous field trips including Ladew Topiary Gardens, the Maryland Zoo & Botanical Gardens, and an optional weekend trip to Cape Henlopen State Park in Delaware. Students meet frequently for critiques and discussions based on historic and contemporary imagery. They will learn to use Photoshop for image adjustment. Techniques such as high dynamic range, duotone, panorama and infrared will be covered. Students work on a project of their choice and produce a portfolio of ten prints. Digital SLRs are provided. Attendance at 1st class is mandatory. No need to email for approval. Instructor(s): P. Berger
Area: Humanities.
AS.371.164. Introduction to Printmaking. 2.0 Credits.
Working with non-toxic/water based inks and both an engraving press and hand tools, students will explore several types of printmaking. Methods will include intaglio, collograph and both simple and multi-plate relief. As they develop their prints, students can then observe and exploit the strengths that each method has to offer. Drawing and Photoshop skills are helpful but not required.
Instructor(s): B. Gruber.
Area: Humanities.

AS.371.165. Location Photography. 3.0 Credits.
Working in the studio and in various locations, students will learn the fundamentals of lighting interiors and strategies for working in almost any environment. Field trips will include the National Aquarium, Evergreen Museum & Library, a Howard County horse farm, a Tiffany-designed church and a Hampden photo studio. Students will also concentrate on the fine art of printing in our digital lab. They will develop a final portfolio of 10 photographs which express a personal vision about a location of their choice. A basic knowledge of digital photography is helpful, but not required. Approval for this course will be considered after enrollment on ISIS.
Instructor(s): L. Premo.
Area: Humanities.

AS.371.166. Landscape Photography. 3.0 Credits.
In this course students will experience the drama and beauty of the urban and rural landscape. On numerous field trips they will hone their camera technique as well as learn elements of composition and develop a personal style. Students will learn the fundamentals of Photoshop and they will also be introduced to the beauty of black and white in Silver Efex software. Digital SLR cameras will be provided.
Instructor(s): P. Berger
Area: Humanities.

AS.371.167. Lens to Page: The Photographer's Book. 3.0 Credits.
In this unique course, a photographer, a museum curator, and a book artist mentor students as they create photography books on subjects of their choosing. The class will concentrate on elements of composition, narration, design, and aesthetics. Field trips to view both public and private book collections and libraries will provide historical context for the evolution of book production, while actual shared volumes may serve as inspiration or models for emulation. As final project, each student will create a hardbound book using Blurb software. Fundamentals of Photoshop will be covered. A culminating exhibition affords students the opportunity to showcase their respective volumes at JHU’s elegant Evergreen Museum & Library. Attendance at first class is mandatory.
Instructor(s): P. Berger
Area: Humanities.

AS.371.170. Works on Paper. 2.0 Credits.
As the title suggests, experienced students in this course will focus on the creation of artwork on paper. We’ll use a wide variety of paper supports and mediums will include pastel, ink, watercolor, charcoal, acrylic and oil paint. Subject matter will range from figure to landscape, from color theory to differentiation. Working visits to the Baltimore Museum of Art and Johns Hopkins Archaeological Museum are planned.
Instructor(s): B. Gruber
Area: Humanities.

AS.371.171. Color Explorations & Theory. 3.0 Credits.
Course begins Tuesday, June 28th. We will explore the physical characteristics, psychological effects and basic physics of color through exercises in various applications. Primary mediums include: Paint, Color-Aid Paper & Photoshop. Emphasis is placed on the investigation of color effects used in applied and fine arts.
Instructor(s): C. Gregory
Area: Humanities.

AS.371.172. DIY Art: You Are the Medium. 3.0 Credits.
Art is not confined to the makers labors with traditional art materials. Art is transactional and can be made of anything. It brings forth personal narrative ones internal experience in a concrete form and seeks resonance with the viewer. Art-making is a shared place of possibility and self-revelation, available to anyone with a desire to make visible their thoughts and feelings. Students will engage with novel creative processes and materials and will be challenged to broaden their perspectives on the essential nature of art. Personal narratives will be deepened through a class visit to the American Visionary Art Museum, as well as a short-term group residency with the artists of Make Studio in Hampden. Approval for this course will be considered after enrollment on ISIS; no need to email.
Instructor(s): C. Goucher
Area: Humanities.

AS.371.174. Introduction to Digital Art Production. 2.0 Credits.
An introduction to digital media tools with a focus on creating art and communicating ideas. Develop your skills in audio/visual communication including graphics, web design, sound and video production. Class meets at the Digital Media Center and includes an introduction to DMC’s facilities and broad range of digital production gear, plus studio visits with digital artists working in a variety of media.
Instructor(s): K. Anchor.

AS.371.177. Design Studies: Detail, Product, Prototype. 3.0 Credits.
When we undertake the design of an artifact—something material, perhaps interactive—we do more than create a pretty little sculpture, or simply enclose the inner workings of a product. We think about aesthetics; about ergonomics; about material heft and surface texture. In a successful product, toy, or building detail it is often something ineffable—the way the object interfaces with the human hand, or the way it takes on a personality in the mind—that results in its success as an object of design. The course is structured as a series of design exercises, each intended to develop the graphical and manual skill-set of the designer. Our subject, broadly speaking, is the design of small things: from building details to useful products and tools, the act of drawing iterative design sketches, and creating prototypes, will guide us in the development of practical design intelligence.
Instructor(s): C. Phinney
Area: Humanities.

AS.371.190. Painting & Drawing the Local Landscape. 2.0 Credits.
Clear fall weather in Baltimore and the wide variety of landscape and architecture in and around the Homewood campus provide an ideal opportunity to paint and draw outside. Working from life, masterworks and slides, we will investigate the history and practice of landscape painting, beginning with tonal wash drawings and progressing to full-color paintings. Media will include charcoal, ink, watercolor and oil paint. Slide lectures, demonstrations and museum and library visits will be featured. Portable easels provided.
Prerequisites: AS.371.131 OR AS.371.133 OR Instructor's Permission Required
Instructor(s): B. Gruber.
AS.371.191. Introduction to Video Art. 2.0 Credits.
Throughout the semester, students will screen video art and respond by shooting and editing their own video works. They will think critically about the personal and societal function that video artwork serves. We'll look at the work of artists ranging from Martha Rosler and Hennessy Youngman, to Spike Jonze and music videos. We will discuss and explore the intersections between video, poetry, painting, and music. Students will be required to learn video editing software, write short video responses, and read and discuss relevant essays. Students can expect to shoot and edit four video production assignments.
Instructor(s): J. Roche.

AS.371.200. Visualizing Music. 3.0 Credits.
In this course, JHU photography students will pair up with Peabody Conservatory of Music student composers to develop an interdisciplinary work that grows out of their conversations and passions. Working under the guidance of Phyllis Berger, CVA Photography Supervisor, and David Smooke, Peabody Conservatory Music Theory Chair, students will design a program of music and photography that brings together the experience of looking and listening. Their work will be exhibited and performed at Evergreen Museum and Library. Attendance at first class is mandatory.
Instructor(s): D. Smooke; P. Berger
Area: Humanities.

AS.371.201. Drawing Outside the Box. 3.0 Credits.
Class begins Monday, May 27th. We will explore essential principles, tools, terminology & media, while pushing the boundaries of "traditional drawing" by adopting alternatives such as drawing with wire, inking with grass, and animating gesture in Photoshop. Not only will we draw from observation, which builds the perceptual platform and skills for spatial understanding and rendering, we will draw from intuition, movement, and outdoor stimuli. Subject matter may include: still life, interiors, landscape, architecture, the human figure and personal narrative.
Instructor(s): C. Gregory
Area: Humanities.

AS.371.202. Street Photography: Ten Photos, Ten Stories. 3.0 Credits.
Street photography is about seeing and reacting, in order to capture small, revelatory moments in a single image. We'll cover camera operation basics, study inspiring examples by historical and contemporary photographers such as Robert Frank and Helen Levitt, and develop a more acute sense of sight on field trips to public parks and neighborhoods and through assignments and critiques. In the second half of the semester, students work on their own projects to develop 10 images that each tell a story, however slight, about the human condition.
Instructor(s): J. Bishop
Area: Humanities.

AS.371.301. Landscapes: Photographing the Burren. 3.0 Credits.
The Burren College of Art, located in a medieval castle on Ireland's Atlantic coast, serves as the base for this digital photography course. Fundamentals of the Digital SLR are reviewed as well as image correction and manipulation in Photoshop. Focusing on the varied landscapes of Ireland, students will assemble a portfolio of digital photographs and exhibit their work in a group show at the end of the Program. Students of all majors and levels are welcome. Course must be taken for a grade.
Instructor(s): P. Berger
Area: Humanities.

AS.371.302. Photographic Portfolio. 3.0 Credits.
In this upper level course, experienced students will work on a semester-long project that reflects their artistic sensibility, interests and passion for photography. They will develop their ideas within a seminar style format that allows for conversation and debate and provides a forum for the evolution of content within their work. Through a combination of critique, lecture and lab, students will complete a portfolio of ten printed images that work together in a series. Recommended Course Background: Previous CVA photography course or instructor's permission.
Instructor(s): P. Berger
Area: Humanities.

AS.371.303. Documentary Photography. 3.0 Credits.
In this course, we will explore different genres of documentary photography including: the fine art document, photojournalism, social documentary photography, the photo essay and photography of propaganda. Field trips offer opportunities to work in the field. Students will work on a semester-long photo-documentary project on a subject of their choice. Camera experience is a plus, but not a prerequisite. Students will be loaned a digital SLR for the semester.
Instructor(s): P. Berger
Area: Humanities.

AS.371.304. Photo Seminar: Wet Darkroom. 3.0 Credits.
In this film based course, students develop a project of their choice over the semester working independently in the darkroom and meeting for weekly critiques and discussions. Using the zone system (a method of pre-visualization developed by Ansel Adams) students will experiment with different film, paper and developer combinations specific to their projects. Writing in the form of a journal as well as critical analysis of images are integral parts of the seminar experience.
Prerequisites: AS.371.146 or Permission Required
Instructor(s): Staff
Area: Humanities.

AS.371.305. Photographs and Text: The Art of the Narrative. 3.0 Credits.
In the tradition of the illuminated manuscript, students will use photographs and text creatively to tell a story. Their journey will begin with visits to Johns Hopkins University museums, where they will choose an object as inspiration for their narrative. This could be an illustration from the George Peabody Library, a statue from the Archaeological Museum, an instrument from the Civil War at the Johns Hopkins Medical Museum, or a silver spoon at the Homewood Museum. Field trips to the JHU museums will be an integral part of this course. The resulting portfolios of five large prints will be curated by Evergreen Museum & Library director James Abbott for an exhibition at Evergreen Museum. Course will be co-taught by CVA instructor Phyllis Berger and book artist Betty Sweren.
Instructor(s): P. Berger
Area: Humanities.

AS.371.306. Digital Photography: Photographing the Burren. 3.0 Credits.
The Burren College of Art, located in a medieval castle on Ireland's Atlantic coast, serves as the base for this digital photography course. Fundamentals of the Digital SLR are covered as well as image correction and manipulation in Photoshop. Students will work one-on-one with their instructor and will exhibit their work in a group show at the end of the program. Students of all majors and levels are welcome. Course must be taken for a grade.
Instructor(s): H. Ehrenfeld; P. Berger
Area: Humanities.

AS.371.501. Independent Study. 2.0 Credits.
Instructor(s): B. Gruber; P. Berger.
AS.371.502. Independent Study. 0.0 - 2.0 Credits.
Instructor(s): B. Gruber; C. Hankin; P. Berger.

AS.371.590. Independent Study. 3.0 Credits.
Instructor(s): C. Hankin.

Cross Listed Courses
Film and Media Studies
AS.061.376. Arts and Culture Journalism: Interactive Media, Online Publishing. 3.0 Credits.
Students will participate in the ongoing creation of BmoreArt.com, an online arts and culture publication that serves the Baltimore community. In conjunction with visiting professionals, students will investigate the Baltimore cultural community and create different types of editorial content using interactive media including film, video, sound, and writing. Students will produce creative content utilizing their individual areas of expertise - such as visual art, art history, music, literary arts, film, and theater - while working together as a professional organization. A strong emphasis will be placed on the student's collaborative participation and creative experimentation. Students with differing backgrounds in media will approach this project from unique perspectives, which will be valued and cultivated. Students with previous experience in journalism are welcome. An introductory writing or film course is suggested as a prerequisite.
Instructor(s): C. Ober
Area: Humanities
Writing Intensive.

German Romance Languages Literatures
AS.213.348. Picturing Jews: Representing Jewish Identity in Modern Art, Film & Literature. 3.0 Credits.
This course will consider the different ways Jewish identity has been represented in the 19th and 20th centuries, focusing primarily on Central and Eastern Europe. Race, nationalism, religion, language, geography, politics—all helped shape different ways of understanding just what it meant to be a Jew, and all found expression in art and literature by both Jews and non-Jews. Looking at texts originally written in German, Yiddish, and Hebrew, including prose, poetry, journalism and drama, as well as painting, photography, graphic design, architecture, and film we will gain an understanding of the range of ways that Jewish identity could be understood and expressed as well as of the ideological stakes and historical contexts of such representations. Writers and artists examined will include Chagall, Kafka, Sholem Aleichem, and Bialik. All readings will be in translation.
Instructor(s): S. Spinner
Area: Humanities.

Writing Seminars
AS.220.407. The Illustrated Short Story. 4.0 Credits.
A collaboration of The Writing Seminars and The Center for Visual Arts Students will study JHU's Homewood House, residence of the Carroll family, choosing a room as the site of a story or a series of prose poems. To illustrate their work and produce an artist book, students will learn camera handling and Photoshop.
Instructor(s): J. McGarry
Area: Humanities.

Program in Museums and Society
AS.389.335. Recreating Ancient Greek Ceramics. 4.0 Credits.
This hands-on course in experimental archaeology brings together undergraduate and graduate students across disciplines to study the making of Athenian vases. Students work closely with expert ceramic artists, and in consultation with art historians, archaeologists, art conservators, and materials scientists to recreate Greek manufacturing processes.
Instructor(s): S. Balachandran
Area: Humanities.

Writing Seminars
http://writingseminars.jhu.edu/
The Writing Seminars exists to help students combine imaginative writing with scholarship in the general context of the humanities.

Undergraduate Program
Requirements for a B.A. degree
(Also see Requirements for a Bachelor's Degree (p. 7))

AS.220.105 Fiction/Poetry Writing I and AS.220.106 Fiction/Poetry Writing II are prerequisite courses required for all majors and others who want to take advanced courses in writing. Majors must receive a grade of C- or better in all courses required for the major and no major requirements may be taken satisfactory/unsatisfactory.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.220.105</td>
<td>Fiction/Poetry Writing I</td>
<td>3</td>
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<tr>
<td>AS.220.106</td>
<td>Fiction/Poetry Writing II</td>
<td>3</td>
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<tr>
<td></td>
<td>Four courses of English literature.</td>
<td>12</td>
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<td></td>
<td>Two courses in philosophy. It is recommended that one course be a Philosophy Department introductory course.</td>
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<tr>
<td></td>
<td>Two courses in history. Majors are encouraged to take one history survey course in the History Department. May include one course from History of Art or from History of Science and Technology.</td>
<td>6</td>
</tr>
<tr>
<td>AS.220.200</td>
<td>Introduction to Fiction</td>
<td>3</td>
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<tr>
<td>AS.220.201</td>
<td>Introduction to Poetry</td>
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<tr>
<td></td>
<td>One fiction course at the 300-400 level.</td>
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<tr>
<td></td>
<td>One poetry course at the 300-400 level.</td>
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<tr>
<td></td>
<td>One advanced writing workshop.</td>
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<tr>
<td></td>
<td>Three elective courses at the 200-400 level within the department.</td>
<td>9</td>
</tr>
</tbody>
</table>

Foreign language proficiency through the second semester of the intermediate level is required.

* Expository Writing may not apply towards the English literature requirement.
* Courses cross-listed with The Writing Seminars may count toward history, philosophy, or English requirements in the major as appropriate. They may not count toward Writing Seminars departmental requirements without approval.

Honors
A GPA of 3.5 or better in all major requirements is required to earn honors in the major.
### Sample Program Plan:

#### Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AS.220.105 Fiction/Poetry Writing I</td>
<td>3</td>
<td>AS.220.106 Fiction/Poetry Writing II</td>
<td>3</td>
</tr>
<tr>
<td>History course #1</td>
<td>3</td>
<td>English literature course #1</td>
<td>3</td>
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<tr>
<td>First year foreign language</td>
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<td>First year foreign language</td>
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#### Sophomore

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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.220.201 Introduction to Poetry or 200</td>
<td>3</td>
<td>AS.220.200 Introduction to Fiction or 201</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy course #1</td>
<td>3</td>
<td>A Writing Seminars course in Fiction or Poetry at the 300 or 400 level</td>
<td>3</td>
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<tr>
<td>Second year foreign language</td>
<td>3</td>
<td>English literature #2</td>
<td>3</td>
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<td></td>
<td>9</td>
<td>Second year foreign language</td>
<td>12</td>
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#### Junior

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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>A Writing Seminars course in Fiction or Poetry at the 300 or 400 level</td>
<td>3</td>
<td>A Writing Seminars elective course</td>
<td>3</td>
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<tr>
<td>English literature course #3</td>
<td>3</td>
<td>English literature course #4</td>
<td>3</td>
</tr>
<tr>
<td>History course #2</td>
<td>3</td>
<td>Philosophy course #2</td>
<td>3</td>
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#### Senior

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<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>An Advanced Fiction or Poetry Workshop</td>
<td>3</td>
<td>A Writing Seminars elective course</td>
<td>3</td>
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<tr>
<td>A Writing Seminars elective course</td>
<td>3</td>
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<td>6</td>
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</tbody>
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Total Credits: 66

### Graduate Program

The Writing Seminars offers a Master of Fine Arts (M.F.A.) in fiction and poetry. Students admitted to the M.F.A. program enroll in two years of course work and produce a substantial manuscript in the form of a novel or collection of fiction or poetry. M.F.A. candidates are chosen on the basis of a manuscript, college transcripts, GRE scores, and appropriate letters of recommendation that testify to the student's ability and willingness to undertake serious study in the literary arts. Since all students receive financial aid in the form of full tuition and a teaching assistantship, applicants must be able to demonstrate aptitude for college teaching.

The program requires two full years of residency in Baltimore. Students enroll each semester in two courses: a writing workshop in poetry or fiction and a second course in craft or literature taught within the department. At the end of the first year, students present a portfolio of revised work for faculty review. Successful completion of this work is a requirement for continuation in the second year.

The M.F.A. degree in The Writing Seminars is designed for students committed to the study and practice of literary writing at the highest level of accomplishment. Approximately four poets and four fiction writers will be admitted annually. Our pedagogy emphasizes genre-informed discussions, faculty conferences, independent readings, and interactions with visiting writers. Culminating in a book-length thesis, this immersion in literary study is designed to inculcate the habits and skills necessary for a productive writer's life.

Students applying to the M.F.A. program should have a bachelor's degree. All must demonstrate competence in a foreign language at the college level.

For current faculty and contact information go to http://writingseminars.jhu.edu/people/

### Faculty

#### Chair
David Yezzi
Associate Professor, poetry

#### Professors
Brad Leithauser
Fiction

Jean McGarry
Fiction

Mary Jo Salter
Poetry

### Visiting Associate Professors
Wayne Biddle
Nonfiction

### Senior Lecturers
Tristan Davies
Fiction

Greg Williamson
Poetry

### Decker Professor Emeritus
John T. Irwin
Criticism and poetry

### Assistant Professors
James Arthur
Poetry

Danielle Evans
Fiction

Dora Malech
Poetry

Eric Puchner
Fiction

### Richard A. Macksey Professor for Distinguished Teaching in the Humanities
Alice McDermott
Fiction
Homewood Professor of the Arts
Andrew Motion

Professor Emeritus
John Barth
Fiction

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

AS.220.101. Narrative Medicine. 1.0 Credit.
The course will introduce students to the role of storytelling in medicine through a variety of essays, short stories and documentaries, from Susan Sontag’s Illness as Metaphor to Atul Gawande’s Complications to Terry Wrong’s Hopkins. In addition to studying these narratives, students will produce their own written works and meet guest writers from the local medical community. Throughout, the course will provide students with valuable practice in critical analysis and reasoning, skills that are tested on entrance exams such as the MCAT.
Instructor(s): E. Parker
Area: Humanities
Writing Intensive.

AS.220.105. Fiction/Poetry Writing I. 3.0 Credits.
A course in realist fiction and traditional verse, with readings in Eudora Welty, Vladimir Nabokov, Henry James, Robert Frost, Paul Fussell, John Gardner, Seamus Heane, and Gwendolyn Brooks. This first course for writers is a study of forms of short fiction and metered verse. Students compose short stories and poems; includes practice of critical attention to literary models and workshop of student writing. This course is a prerequisite for most upper level courses. This course is part of the year-long Introduction to Fiction and Poetry, and must be taken before AS.220.106.
Instructor(s): Staff
Area: Humanities
Writing Intensive.

AS.220.106. Fiction/Poetry Writing II. 3.0 Credits.
The second half of IFP, a course in counter-traditional antirealist fiction and free verse (Emily Dickinson, Virginia Woolf, Elizabeth Bishop, Franz Kafka, Italo Calvino, and William Carlos Williams). This course is a prerequisite for most upper level courses.
Prerequisites: AS.220.105
Instructor(s): M. Broida; R. Pereira Espinosa
Area: Humanities
Writing Intensive.

AS.220.108. Introduction to Fiction & Nonfiction. 3.0 Credits.
A course in realist fiction and nonfiction, with readings by Eudora Welty, Vladimir Nabokov, Henry James; George Orwell, Beryl Markham and Truman Capote. Students compose short stories and essays with attention to literary models. AS.220.105 can be substituted for AS.220.108.
Instructor(s): J. Cavanaugh-Simpson
Area: Humanities
Writing Intensive.

AS.220.138. Make ‘Em Laugh. 3.0 Credits.
The quickest way to kill a joke is to explain it. So how do we learn to be funny? In this class, we’ll explore techniques in humor writing. Whether poking holes in accepted absurdities or helping us laugh at death, humor makes us smile and think. Each week, we’ll focus on a different type of humor—dark comedy, satire, etc.—through stories, nonfiction, criticism, and author interviews. Students will write imitations and original work.
Instructor(s): G. Kirby
Area: Humanities
Writing Intensive.

AS.220.140. Make ‘Em Laugh. 3.0 Credits.
The quickest way to kill a joke is to explain it. So how do we learn to be funny? In this class, we’ll explore techniques in humor writing. Whether poking holes in accepted absurdities or helping us laugh at death, humor makes us smile and think. Each week, we’ll focus on a different type of humor—dark comedy, satire, etc.—through stories, nonfiction, criticism, and author interviews. Students will write imitations and original work.
Instructor(s): G. Kirby
Area: Humanities
Writing Intensive.

AS.220.142. Portraits of the Artists: Writing Self in Fiction. 3.0 Credits.
Writing is a carefully hewn combination of memory and imagination, and while it is impossible to know how much of the literary canon is sourced in autobiography, the truism holds firm: people write what they know. In this course, we will focus on modern and contemporary autobiographical fiction, looking closely at source, creative process, craft, and style, in order to answer the essential question, How does a writer successfully roll fact into fiction? Students will complete writing activities and participate in discussions and workshops. They will produce either an autobiographical story, or the first chapter of a longer work. Novels: Portrait of the Artist as a Young Man, Joyce; The Bell Jar, Plath; The Lover, Duras. Stories by Hemingway, Updike, Munro, O’Brien, Casey.
Instructor(s): J. Slovak
Area: Humanities
Writing Intensive.

AS.220.150. Portraits of the Artists: Writing Self in Fiction. 3.0 Credits.
Flannery O’Connor once said “Anybody who has survived his childhood has enough information about life to last him the rest of his days.” Fiction is a carefully hewn combination of memory and imagination, and while it is impossible to know how much of the literary canon is sourced in autobiography, the truism holds firm: people write what they know. In this course, we will focus on modern and contemporary autobiographical fiction, looking closely at source, creative process, craft, and style, in order to answer the essential question, How does a writer successfully roll fact into fiction? Students will complete writing activities and participate in discussions and workshops. They will produce either an autobiographical story, or the first chapter of a longer work. Novels: Portrait of the Artist as a Young Man, Joyce; The Bell Jar, Plath; The Lover, Duras. Stories by Hemingway, Updike, Munro, O’Brien, Casey.
Instructor(s): J. Slovak
Area: Humanities
Writing Intensive.

AS.220.160. Write Up. 3.0 Credits.
Courses in writing and research may be initiated by students who are enrolled in the class. The student must register for 01 in addition to the usual 02 enrollment.
Area: Humanities
Writing Intensive.

AS.220.182. Writing the Artistic Life. 3.0 Credits.
A course in realist fiction and nonfiction, with readings in Eudora Welty, Vladimir Nabokov, Henry James; George Orwell, Beryl Markham and Truman Capote. Students compose short stories and essays with attention to literary models. AS.220.105 can be substituted for AS.220.108.
Instructor(s): J. Cavanaugh-Simpson
Area: Humanities
Writing Intensive.

AS.220.190. Narrative Medicine. 1.0 Credit.
The course will introduce students to the role of storytelling in medicine through a variety of essays, short stories and documentaries, from Susan Sontag’s Illness as Metaphor to Atul Gawande’s Complications to Terry Wrong’s Hopkins. In addition to studying these narratives, students will produce their own written works and meet guest writers from the local medical community. Throughout, the course will provide students with valuable practice in critical analysis and reasoning, skills that are tested on entrance exams such as the MCAT.
Instructor(s): E. Parker
Area: Humanities
Writing Intensive.

AS.220.200. Make ‘Em Laugh. 3.0 Credits.
The quickest way to kill a joke is to explain it. So how do we learn to be funny? In this class, we’ll explore techniques in humor writing. Whether poking holes in accepted absurdities or helping us laugh at death, humor makes us smile and think. Each week, we’ll focus on a different type of humor—dark comedy, satire, etc.—through stories, nonfiction, criticism, and author interviews. Students will write imitations and original work.
Instructor(s): G. Kirby
Area: Humanities
Writing Intensive.

AS.220.238. Make ‘Em Laugh. 3.0 Credits.
The quickest way to kill a joke is to explain it. So how do we learn to be funny? In this class, we’ll explore techniques in humor writing. Whether poking holes in accepted absurdities or helping us laugh at death, humor makes us smile and think. Each week, we’ll focus on a different type of humor—dark comedy, satire, etc.—through stories, nonfiction, criticism, and author interviews. Students will write imitations and original work.
Instructor(s): G. Kirby
Area: Humanities
Writing Intensive.

AS.220.242. Portraits of the Artists: Writing Self in Fiction. 3.0 Credits.
Writing is a carefully hewn combination of memory and imagination, and while it is impossible to know how much of the literary canon is sourced in autobiography, the truism holds firm: people write what they know. In this course, we will focus on modern and contemporary autobiographical fiction, looking closely at source, creative process, craft, and style, in order to answer the essential question, How does a writer successfully roll fact into fiction? Students will complete writing activities and participate in discussions and workshops. They will produce either an autobiographical story, or the first chapter of a longer work. Novels: Portrait of the Artist as a Young Man, Joyce; The Bell Jar, Plath; The Lover, Duras. Stories by Hemingway, Updike, Munro, O’Brien, Casey.
Instructor(s): J. Slovak
Area: Humanities
Writing Intensive.

AS.220.250. Portraits of the Artists: Writing Self in Fiction. 3.0 Credits.
Flannery O’Connor once said “Anybody who has survived his childhood has enough information about life to last him the rest of his days.” Fiction is a carefully hewn combination of memory and imagination, and while it is impossible to know how much of the literary canon is sourced in autobiography, the truism holds firm: people write what they know. In this course, we will focus on modern and contemporary autobiographical fiction, looking closely at source, creative process, craft, and style, in order to answer the essential question, How does a writer successfully roll fact into fiction? Students will complete writing activities and participate in discussions and workshops. They will produce either an autobiographical story, or the first chapter of a longer work. Novels: Portrait of the Artist as a Young Man, Joyce; The Bell Jar, Plath; The Lover, Duras. Stories by Hemingway, Updike, Munro, O’Brien, Casey.
Instructor(s): J. Slovak
Area: Humanities
Writing Intensive.

AS.220.300. Write Up. 3.0 Credits.
Courses in writing and research may be initiated by students who are enrolled in the class. The student must register for 01 in addition to the usual 02 enrollment.
Area: Humanities
Writing Intensive.
AS.220.152. Words of Light: Poetry and Photography. 3.0 Credits.
This course examines the role of lyric poetry in a media culture that has become obsessed with photographs. In a world where everyone with a cell phone is a photographer – and every literate person a writer – how do we create valuable work? We will pair genres of photography and lyric poetry in discussion – landscape photos and poems of place, for example – and view each through the other. Students will read a body of poetry and criticism (prose by Walter Benjamin, Susan Sontag, Penelope Pelizzon, Roland Barthes, et al.). In addition to bringing worthwhile comments on the readings to each class, students will submit one original poem and one original photo each week for credit. * Prerequisites: Each student is required to have a device capable of taking digital photos. Cell phones are fine.
Instructor(s): S. Greer
Area: Humanities.

AS.220.162. Writing for Children: The Tales We Can’t Seem to Forget. 1.0 Credit.
In this summer mini-course, students will use canonical works of children’s literature to inspire their own stories and verses, which they will read aloud and discuss in a workshop setting. We will focus on the uses and reuses of fairy and folk tales – from early works compiled by the Brothers Grimm and Charles Perrault to fantasies from the Victorian era by Mary de Morgan and Oscar Wilde. We will end with contemporary reimaginings by Roald Dahl, Neil Gaiman, Angela Carter and Lauren Child. Class will include discussion of illustration, recent trends in children’s literature, and the publishing process. Course instructor Sarah Smith is the former Children’s Book editor at the New York Times Book Review.
Instructor(s): S. Smith
Area: Humanities.

AS.220.165. Writing Unreality: Fantastical Fiction. 3.0 Credits.
While fiction is by definition not “real,” some modes of fiction present deliberate departures from the world as we know it. This class will examine fantastical and non-realist writing, including surrealism and magic realist stories, as well as works with fairy-tale and folklore influences, and stories with elements of the uncanny or supernatural. Students will read and discuss representative fiction, complete weekly creative assignments, and participate in workshop of a final, full-length piece.
Instructor(s): S. Robinson
Area: Humanities.

AS.220.167. Serious Nonsense: Light & Comic Poetry. 1.0 Credit.
This course will provide a guided tour of some of the funniest poems ever written in English. Genres covered will include light verse, satire, parody, absurdism (“nonsense”), and others. We'll explore the serious side of comic poetry and vice versa. Students will have the opportunity to write their own comic verse in the genres discussed.
Instructor(s): A. Allen
Area: Humanities.

AS.220.180. Special Opportunities in Undergraduate Learning: Metaphor and Poetry. 1.0 Credit.
We all use figurative language, such as metaphor, simile, and irony. But what does it mean for language to be figurative, and how does this affect its meaning? This course will approach these questions from the angle of poetry. We'll ask further questions like: how do some poets use metaphor differently from others? What does Shakespeare mean when he says “my love is as a fever”? We'll read passages from different critics on metaphor, including several from Lakoff and Turner’s More Than Cool Reason: A Field Guide to Poetic Metaphor and Denis Donoghue’s Metaphor. Students will write poems with specific metaphorical requirements; they'll learn to use conceits (metaphors that govern an entire poem); they'll learn to use conventional metaphors; most importantly, they'll learn to think critically about why certain metaphors work and certain ones don't.
Instructor(s): J. Frantz.

AS.220.195. Fitzgerald’s Short Stories. 3.0 Credits.
An examination of F. Scott Fitzgerald’s major short stories in the 1920s and 1930s. We’ll analyze Fitzgerald’s commitment to exploring the tension between two opposing intellectual movements: literary naturalism (which championed the primacy of environmental determinism) and literary realism (which championed the primacy of free will). We’ll trace Fitzgerald’s mercurial loyalty to each movement: his abandonment of one school of thought for the other, from one year to the next. In “May Day” he even embraced both movements equally—testimony to his belief that “the test of a first-rate intelligence is the ability to hold two opposed ideas in mind at the same time and still retain the ability to function”. Did Fitzgerald ultimately advocate one school of thought over the other? Or, did he intend simply to stage the debate between them?
Instructor(s): J. Rockefeller
Area: Humanities
Writing Intensive.

AS.220.200. Introduction to Fiction. 3.0 Credits.
Study in the reading and writing of short narrative with focus on basic technique: subject, narrative voice, character, sense of an ending, etc. Students will write weekly sketches, present story analyses in class, and workshop one finished story. Selected parallel readings from such models of the form as Henry James, Anton Chekov, James Joyce, John Cheever, Alice Munro, and others. Permission Required. (Formerly AS.220.191.)
Prerequisites: AS.220.105 and AS.220.106
Instructor(s): K. Noel, R. Puchner, T. Davies
Area: Humanities.

AS.220.201. Introduction to Poetry. 3.0 Credits.
A study of the fundamentals and strategies of poetry writing. This course combines analysis and discussion of traditional models of poetry with workshop critiques of student poems and student conferences with the instructor. (Formerly AS.220.141)
Prerequisites: AS.220.105 AND AS.220.106
Instructor(s): D. Malech, J. Arthur
Area: Humanities.
AS.220.204. Introduction to Dramatic Writing: Film. 3.0 Credits.
Screenwriting workshop. This course will look at the screenplay as both a literary text and blue-print for production. Several classic screenplays will be analyzed. Students will then embark on their own scripts. We will intensively focus on character development, creating "believable" cinematic dialogue, plot development, conflict, pacing, dramatic foreshadowing, the element of surprise, text and subtext, and visual storytelling. Several classic films will be analyzed and discussed (PSYCHO, CHINATOWN, BLADE RUNNER). Students will learn professional screenplay format and write an 8-12 page screenplay that will be read in class and critiqued.
Instructor(s): M. Lapadula
Area: Humanities
Writing Intensive.

AS.220.205. Introduction to Dramatic Writing: Plays. 3.0 Credits.
This seminar will explore the stage play across a variety of styles, tones and genres. After reading and analyzing classic theatrical works by Edward Albee, Harold Pinter, Samuel Beckett, Caryl Churchill, Tennessee Williams, Beth Henley and Martin McDonough, students will be inspired to embark on creating their own stage-worthy material. The final goal of the class will be for each playwright to compose a ten-minute one-act play by the end of the summer session. Various assignments will be given along the way which will include writing monologues, two-character scenes, creating situations where the physical environment impacts dramatically on the characters’ lives and more. Students will have their plays read aloud in class and each will be closely analyzed.
Instructor(s): M. Lapadula
Area: Humanities
Writing Intensive.

AS.220.206. Writing about Science I: Daily News Journalism. 3.0 Credits.
This course is designed to teach students the skills of daily news reporting, with a focus on covering science news. Students will learn how turn scientific discoveries into lively and engaging prose for the general public, interview sources, and pitch stories to news organizations. The skills taught are applicable to all areas of journalism, not just science journalism.
Instructor(s): D. Grimm
Area: Humanities
Writing Intensive.

AS.220.210. Introduction to Non-Fiction: Science as a Social Activity. 3.0 Credits.
Using the political and economic milieu of science and technology as a context for our writing, we will study how social factors such as government, money, secrecy, and ethics affect the conduct and public presentation of scientific and medical research. Controversies from 20th century history as well as current events will be discussed. Writing assignments to satisfy the W requirement will consist of short papers derived from classroom topics.
Instructor(s): W. Biddle
Area: Humanities
Writing Intensive.

AS.220.211. Journalism for Writers. 3.0 Credits.
Learn reporting through analysis of famous and infamous work by contemporary journalists such as Janet Malcolm, Michael Finkel, Sarah Corbett and Seymour Hersch. Students will use readings to understand concepts central to news and feature writing, including libel, fair use, balanced reporting, and appropriate sourcing. They will then head out to find and write their own stories about local issues using best practices learned in class. Sarah Harrison Smith is a former managing editor of the New York Times Magazine and the author of "The Fact Checker’s Bible.
Instructor(s): S. Smith
Area: Humanities.

AS.220.212. Line and Lineage: A Survey of Poetry Writing. 3.0 Credits.
In this lecture-based course, students will build their knowledge of the history of poetry writing in English through a chronological exploration of the poetic line. This course will serve as a foundation for future studies in the writing and reading of poetry.
Prerequisites: AS.220.105 AND AS.220.106
Instructor(s): C. Childers
Area: Humanities.

AS.220.213. Fiction Survey: Once Upon a Time. 3.0 Credits.
A review of the origins and development of the realist short story from fable, fairy tale, saint’s life, Bible story, through versions created in the Renaissance and classic (19th and 20th century) periods, to modern narratives. Writing Seminars majors only.
Prerequisites: AS.220.105 AND AS.220.106
Instructor(s): J. Hudgins
Area: Humanities.

AS.220.217. If Mama Could See: Poets Writing about Motherhood. 3.0 Credits.
In a 1982 essay, Adrienne Rich writes that “the experience of motherhood was eventually to radicalize me.” In this class, we will consider the ways in which women poets have written through the experiences of being a child and a mother. We will read poems, essays, and interviews by late twentieth century women poets including Adrienne Rich, Lucille Clifton, and Audre Lorde, among others, placing them in a larger historical context. Students will turn in one creative assignment a week, and the course will culminate in a short critical paper.
Instructor(s): J. McGarry
Area: Humanities.

AS.220.218. Writers on Film. 3.0 Credits.
An interdisciplinary course focusing on the film writings of poets, novelists, critics, and essayists such as Virginia Woolf, H.D., James Agee, James Baldwin, and Pauline Kael; and films showing the intertitle and screenplay work of writers such as Anita Loos, F. Scott Fitzgerald, William Faulkner, and Jean Cocteau. Participants will write weekly assignments on film from a critical perspective.
Instructor(s): K. Stine
Area: Humanities
Writing Intensive.
AS.220.219. Readings in Fiction and Literary Nonfiction. 3.0 Credits.
This course offers an in-depth exploration of content, style, and crossover literary techniques among authors who write both fiction and nonfiction, including Jamaica Kincaid’s memoir My Brother and “Girl.” Students will evaluate why each genre was chosen to narrate, for example, such quandaries as ethics in surgery. Abraham Verghese’s novel Cutting for Stone and Richard Selzer’s essay, "The Knife," as well as the reportage and novels of Ernest Hemingway and others. Also explored: topics of social import and questions of identity in James Baldwin’s essays ("Notes of a Native Son") and stories ("Sonny’s Blues"), and other works; The course builds on literary writing and reading techniques established in Intro to Fiction & Nonfiction (IFN) and Intro to Fiction & Poetry (IFP). Either course is a prerequisite, with IFN preferred.
Prerequisites: AS.220.105 OR AS.220.108
Instructor(s): J. Cavanaugh-Simpson
Area: Humanities
Writing Intensive.

AS.220.309. Writing Healthy Baltimore. 3.0 Credits.
Students will explore public health issues in Baltimore and then write about them first in short pieces, and then in longer, polished works. The framework will be the mayor’s Healthy Baltimore 2015 initiative – launched in 2011 to address the city’s top-10 public health problems, including obesity, smoking, drug and alcohol abuse, STDs, cancer, and environmental health hazards. Students will study the initiative and its historical context; examine data sets; explore where and how the initiative intersects with public health practitioners and advocacy groups at the neighborhood level; and write what they learn in different formats, including essays, breaking news, and substance analysis. Students will then “workshop” each other’s papers.
Instructor(s): K. Masterson
Area: Humanities
Writing Intensive.

AS.220.312. Intermediate Fiction: Detail and Description. 3.0 Credits.
An intermediate workshop focusing on the question of how to make fictional worlds feel real. We’ll read 19th, 20th, and 21st century short fiction by authors such as Anton Chekhov, Jhumpa Lahiri, Junot Diaz, and Alice Munro, focusing particularly on how authors make the lives on the page feel three-dimensional. Students will write stories and exercises, including exercises that involve exploring Baltimore in order to observe and write about the city in which we live. Recommend Course Background: Students need to have completed a 200-level Writing Seminars course.
Prerequisites: AS.220.105 AND AS.220.106
Instructor(s): K. Noel
Area: Humanities.

AS.220.313. Writing about the Arts. 3.0 Credits.
Learn the practice of arts journalism, from reviewing to conducting interviews and writing profiles. In class, students will study the work of some of the best writers in this field, pitch story ideas, report and write, and then discuss their pieces in a workshop setting. Instruction will include journalistic ethics, plagiarism, libel law, and use of social media. Students can expect class visits from established journalists. Writing Seminars Majors only
Instructor(s): S. Smith
Area: Humanities

AS.220.314. Journalism and Opinion. 3.0 Credits.
Students will learn about writing op-eds, reviews and feature articles, analyzing a broad range of examples and producing their own work in each category. The course will place a particular emphasis on op-ed-writing as a valuable skill to possess on any career path.
Instructor(s): M. Lasswell
Area: Humanities
Writing Intensive.

AS.220.315. Intermediate Poetry: Sound Effects. 3.0 Credits.
This course explores the crucial role sound plays in the power of poetry, from early roots in oral traditions to contemporary contexts. Through readings, discussion, academic reflection, and creative exercises, participants will explore a range of sound techniques in their own poems and in the poems of others.
Instructor(s): D. Malech
Area: Humanities
Writing Intensive.

AS.220.317. Writing about Science II: Feature Writing Journalism. 3.0 Credits.
This course is designed to teach students the skills of long-form narrative journalism, with a focus on covering science news. Skills taught apply to all areas of journalism, not just science journalism, and include how to compose scenes, create three-dimensional characters, create narrative tension, and conduct on-site reporting. The primary writing assignment will be a 3,000-word feature piece that is pitched, reported, and workshopped throughout the course of the class. "Writing About Science I" (formerly Becoming a Science Journalist) is recommended as a prerequisite for this course. Students who have not taken this course will need to complete a short writing test (may be waived for Writing Seminars students) and obtain the permission of the instructor to enroll. To schedule this test, please contact the instructor at dgrimmm5@jhu.edu
Instructor(s): D. Grimm
Area: Humanities
Writing Intensive.
AS.220.318. Intermediate Fiction: Voice. 3.0 Credits.
This workshop will focus intensely on student writing, and on reading stories with a strong narrative voice, the kinds of stories in which the reader can hear the narrator speaking, where the voice gets stuck in the reader’s mind, where the story feels like an invasion of the narrator’s private thoughts, or is a retelling of the tale for some invisible public, or is the quiet, clear prose of a diarist, journaling into the void.
Area: Humanities.

AS.220.325. Intermediate Fiction: Story and Plot. 3.0 Credits.
The study of plot, with questions, both practical and theoretical, inevitably raised by the short story form. Readings in Chekhov, James, O’Connor, Cheever, Joyce, and Hemingway.
Instructor(s): T. Davies
Area: Humanities.

AS.220.327. Intermediate Fiction: Characters. 3.0 Credits.
Instructor(s): B. Leithauser
Area: Humanities.

AS.220.329. Forming The Short Story. 3.0 Credits.
In the early 1800s popular writers began to compress novel-like narrations into much shorter forms. By the 1880s what we recognize today as the short story had emerged. In this course we will trace the development of the form from its earliest stirrings in the tales of ETA Hoffmann through the Russians Pushkin, Gogol, and Turgenev, to its apotheosis in the stories of Chekhov and Wharton. Critical responses will be creative, using short sketches to experiment with the techniques, some adopted others rejected, and constraints experienced by writers along the way.
Instructor(s): T. Davies
Area: Humanities 
Writing Intensive.

AS.220.331. Intermediate Fiction: Forms of Fiction. 3.0 Credits.
A workshop in the formative genres of fiction: romance, confession, anatomy, and novel. Readings include Flaubert, Stevenson, Camus, and Stephen Dixon. Frequent sketches and two stories.
Prerequisites: Prereqs: AS.220.105 AND AS.220.106
Instructor(s): T. Davies
Area: Humanities 
Writing Intensive.

AS.220.337. Intermediate Dramatic Writing: Film. 3.0 Credits.
An intensive workshop focusing on methodology: enhancing original characterization, plot development, conflict, story, pacing, dramatic foreshadowing, the element of surprise, text and subtext, act structure, and visual storytelling. Each student is expected to present sections of his/her "screenplay-in-progress" to the class for discussion. The screenplay Chinatown will be used as a basic text.
Instructor(s): R. Buso-garcia
Area: Humanities 
Writing Intensive.

AS.220.340. Writers on Writing. 3.0 Credits.
A study of advice from authors such as Francine Prose, E.B. White and John McPhee about the craft of writing. Students will assess points of agreement and disagreement, and gauge how the writers’ work reflects their advice. The course will emphasize practical tools that students can employ in their own nonfiction writing.
Instructor(s): M. Lasswell
Area: Humanities 
Writing Intensive.

AS.220.370. Intermediate Fiction: Dialogue and Exposition. 3.0 Credits.
We will look at a variety of ways in which dialogue furthers artistic ends. We will ask questions like: When is dialogue best expressed directly? When is it best summarized? How does dialogue-heavy short fiction differ from a play? When can dialogue stand on its own, and when does it require an author’s explanation or interpretation? Students will write both creative and expository papers. Recommend Course Background: Students need to have completed a 200-level Writing Seminars class.
Prerequisites: Prereqs: AS.220.105 AND AS.220.106
Instructor(s): B. Leithauser
Area: Humanities 
Writing Intensive.

AS.220.371. Nonfiction in the Post-Factual Era. 3.0 Credits.
When facts are widely ignored or mistrusted in public discourse, what happens to nonfiction as a genre? We will consider the current state of various political and scientific debates, examine historical precedents, and search for practical solutions in nonfiction writing.
Instructor(s): W. Biddle
Area: Humanities 
Writing Intensive.

AS.220.377. Intermediate Poetry: Poetic Forms. 3.0 Credits.
Poetic Forms I fulfills one of the Intermediate requirements for The Writing Seminars Major. It deals with rhyme, meter, traditional forms, and ad hoc forms of students’ own making. Whether you are a poet, novelist, song writer, science writer, or dramatist, this course will help you master lines and sentences even better.
Prerequisites: AS.220.201
Instructor(s): G. Williamson
Area: Humanities.

AS.220.378. Intermediate Poetry: Poetic Forms II. 3.0 Credits.
This course builds on the information and techniques encountered in Poetic Forms I and uses them in reading and imitating a range of contemporary poets. Please note, however, Poetic Forms I is NOT a prerequisite for Poetic Forms II.
Instructor(s): G. Williamson
Area: Humanities.

AS.220.379. Intermediate Poetry: Performing Shakespeare. 3.0 Credits.
This course, which begins with careful textual study, offers students the opportunity to experience Shakespeare’s language as a spoken expression, marked by rhythm, sound, rhetoric, and emotion. By working with (and ultimately committing to memory) sonnets, speeches, and scenes, students will deepen their understanding of Shakespeare’s art, through performance and brief critical writings. Recommended Course Background: Need to have completed a 200-level Writing Seminars’ class.
Instructor(s): D. Yezzi
Area: Humanities.

AS.220.380. Intermediate Fiction: The Scene. 3.0 Credits.
Emphasis in writing scenes—the building blocks of fiction—units of action, units of dialogue. Readings will include the stories of Chekhov, Cheever, Hemingway, and Carver. Recommended Course Background: AS.220.200
Instructor(s): T. Davies
Area: Humanities.
The class will read and discuss classic autobiographical texts by Benjamin Franklin, Frederick Douglass, Henry Thoreau, Henry Adams, Gertrude Stein, Malcolm X, and others. Students will write and workshop their own life stories of substantial length.
Instructor(s): W. Biddle
Area: Humanities
Writing Intensive.

AS.220.385. Intermediate Nonfiction: Communicating Risk. 3.0 Credits.
Scientists, engineers and physicians create and define risks. The public perceives these risks and decides what is acceptable. We will study the psychology and politics of risk communication between experts and laymen.
Instructor(s): W. Biddle
Area: Humanities
Writing Intensive.

AS.220.387. Intermediate Poetry: The Poet as Observer. 3.0 Credits.
A workshop course with readings and writing assignments that emphasize the artistic value of the outward gaze. Students will keep a daily journal of observations, and over the semester will develop those observations into at least 10 new poems. Course readings will include work by Rainer Maria Rilke, Elizabeth Bishop, and Theodore Roethke. Permission Required.
Instructor(s): J. Arthur
Area: Humanities.

AS.220.391. Performing Poetry & Fiction. 3.0 Credits.
Performing Fiction & Poetry: An Acting Workshop for Writers. This hands-on performance workshop, combining literary and theatrical practice, will look closely at what makes a performance or reading compelling, clear, and resonant. Through textual analysis, vocal technique, and group discussion, students will create a pliant and powerful reading style to best serve their work. The course includes regular writing assignments in poetry and fiction and weekly performance and group discussion.
Instructor(s): D. Yezzi
Writing Intensive.

AS.220.393. Intermediate Poetry: Poets in Conversation. 3.0 Credits.
An exploration of poetic process as ongoing discourse within and across generations. Readings, writing assignments, and in-class workshop of student poems will encourage and enable course participants to join the conversation themselves.
Instructor(s): D. Malech
Area: Humanities
Writing Intensive.

AS.220.397. Intermediate Poetry: The Lyric. 3.0 Credits.
What is a lyric poem in the 21st Century? What causes such a thing? What does it sound like? What is it good for? Who writes them? We will. By reading lyric poems written over the last 500 years in English, and by writing our own original work we will find some answers to these questions. This class will have a special emphasis on Free Verse and the particular challenges and joys of such a poem. This workshop aims to generate new work and to cultivate skills necessary for a writer. Permission Required.
Instructor(s): S. Scafidi
Area: Humanities.

AS.220.399. Intermediate Poetry: Playwriting for Poets: Suiting the Action. 3.0 Credits.
Many of the finest modern and contemporary poets were also groundbreaking dramatists, including Goethe, Yeats, Eliot, Millay, Cummings, Brecht, and Walcott. Taking these writers' poetic dramas as models, students will explore the elements of playwriting - plot, character, rhythm, etc. - in order to create original dramatic works. Speeches, scenes, and short plays will be read aloud in class and considered in a workshop setting.
Instructor(s): D. Yezzi
Area: Humanities
Writing Intensive.

AS.220.400. Advanced Poetry Workshop. 3.0 Credits.
The capstone course in poetry writing. Consideration of various poetic models in discussion, some assigned writing, primarily workshop of student poems. Students will usually complete a "collection" poems. (Formerly AS.220.396)
Prerequisites: AS.220.201
Instructor(s): D. Malech
Area: Humanities.

AS.220.401. Advanced Fiction Workshop. 3.0 Credits.
The capstone course in writing fiction, primarily devoted to workshop of student stories. Some assignments, some discussion of literary models, two or three completed student stories with revisions. Completion of Intermediate Fiction is required for admission. (Formerly AS.220.355)
Prerequisites: Pre-req: AS.220.200
Instructor(s): B. Leithauser, T. Davies
Area: Humanities.

AS.220.407. The Illustrated Short Story. 4.0 Credits.
A collaboration of The Writing Seminars and The Center for Visual Arts Students will study JHU's Homewood House, residence of the Carroll family, choosing a room as the site of a story or a series of prose poems. To illustrate their work and produce an artist book, students will learn camera handling and Photoshop.
Instructor(s): J. McGarry
Area: Humanities.

AS.220.408. Readings in Poetry: War Poetry From Troy to Afghanistan. 3.0 Credits.
The course will follow a chronological line from Homer through to American and British poets of the current war in Afghanistan. This means we will be looking at (among other things) Beowulf, poems of the English Civil War, poems of the American Civil War, poems of the First and Second World Wars, and poems about the conflicts in Iraq and Syria as well as Afghanistan. Each class will be divided into two sections of equal length. In the first half we will study poems written by our predecessors - poems by women as well as men, poems written in the front line as well as behind the lines in hospitals and 'at home', and poems written in a variety of forms - ranging from pure lyric to prose-poetry; in the second half we will discuss poems written by members of the class in response to conflict, and/or in response to the poems we are discussing in any given week.
Prerequisites: AS.220.201
Instructor(s): A. Motion
Area: Humanities.
AS.220.409. Readings in Fiction: Faulkner, Fitzgerald, & Hemingway. 3.0 Credits.
An examination of the fiction of three American modernist masters in the context of the early 20th century movement in the verbal and visual arts. Not a workshop course.
Instructor(s): J. Irwin
Area: Humanities.

AS.220.410. Readings in Poetry: Four Women Poets. 3.0 Credits.
A study of technique and strategy in the poetry of Emily Dickinson, Marianne Moore, Elizabeth Bishop, and Amy Clampitt. Not a workshop course.
Instructor(s): M. Salter
Area: Humanities.

AS.220.413. Fiction Survey: Pairings Across Time. 3.0 Credits.
We will trace the ancestry of some modern genres, pairing a modern book with a nineteenth-century counterpart. We will look at suspense fiction (Patricia Highsmith's The Talented Mr. Ripley and Dickens's Tale of Two Cities), romantic comedy (Anne Tyler's Accidental Tourist and a Jane Austen novel), science fiction (Philip K. Dick's Do Androids Dream of Electric Sheep?—the basis for Blade Runner—and Wells's The Time Machine) and tales of the fantastic (stories by John Cheever and Steven Milhauser paired with Poe and ?Hawthorne). A few films may be shown, but not during class.
Instructor(s): B. Leithauser
Area: Humanities.

AS.220.414. Readings in Fiction: The Lyric Mode. 3.0 Credits.
This course will focus on musicality in prose, with close attention to the effects that fiction writers can achieve through assonance, refrain, and the careful management of rhythm. Readings will include work by Toni Morrison, Vladimir Nabokov, Michael Ondaatje, Rainer Maria Rilke, Marilyne Robinson, and Virginia Woolf.
Prerequisites: AS.220.201
Instructor(s): J. Arthur
Area: Humanities.

AS.220.415. Fiction and Social Engagement. 3.0 Credits.
In this Community-Based Learning course, students will explore fiction and areas of social concern in partnership with high-school age writers from Baltimore public schools. Students will read and write fiction and engage in community conversation and collaboration. Participation in some events outside of class time will be required.
Instructor(s): K. Noel
Area: Humanities.

AS.220.417. Advanced Nonfiction Workshop. 3.0 Credits.
Classes will be devoted to writing and collective editing of factual work of significant length and ambition, including essays, journalistic reports, histories, and biographies. Instructor permission required.
Instructor(s): W. Biddle
Area: Humanities
Writing Intensive.

AS.220.418. Readings in Fiction: The Novella. 3.0 Credits.
Registration Restrictions: Permission required. Twentieth-century novellas, with a new author and book each week. The course asks: What can and has been accomplished by American fiction writers in fewer than 150 pages?
Instructor(s): B. Leithauser
Area: Humanities
Writing Intensive.

AS.220.420. Readings in Contemporary Fiction: Coetzee, Delillo, Freudenberger, Johnson. 3.0 Credits.
The central concern of this course is to read, study, think about, and discuss several novels and short story collections, paying special attention to the voice and structural techniques these authors have invented to create compelling works.
Instructor(s): M. Klam
Area: Humanities.

AS.220.424. Science as Narrative. 3.0 Credits.
Class reads the writings of scientists to explore what their words would have meant to them and their readers. Discussion will focus on the shifting scientific/cultural context throughout history. Authors include Aristotle, Copernicus, Galileo, Descartes, Newton, Darwin, Freud, Einstein, Heisenberg, Bohr, Crick and Watson.
Instructor(s): R. Panek
Area: Humanities
Writing Intensive.

AS.220.425. Readings in Fiction: The Story Cycle. 3.0 Credits.
A study of the short story cycle as a literary form. Authors may include Joyce, Schulz, Anderson, Welty, Calvino, Munro, Erdrich, Diaz and others.
Instructor(s): R. Puchner
Area: Humanities
Writing Intensive.

AS.220.427. Readings in Fiction: The Novella. 3.0 Credits.
A study of the novella as a literary form. Authors may include Melville, Turgenev, Tolstoy, Chekhov, Kafka, James, Wharton, Baldwin, Porter, Rulfo, Smiley, and others.
Instructor(s): B. Leithauser
Area: Humanities
Writing Intensive.

AS.220.428. Readings in Fiction: The Stories and Letters of Anton Chekhov. 3.0 Credits.
We will read the major long and short stories of Chekhov, along with selected letters written in the full course of his lifetime. Juniors and Seniors only.
Prerequisites: AS.220.105 AND AS.220.106 AND AS.220.200 AND 300 level Intermediate Fiction
Instructor(s): J. McGarry
Area: Humanities.

AS.220.429. Readings in Poetry: Poetry of Ireland Since 1900. 3.0 Credits.
A close study of twentieth- and twenty-first-century Irish poetry. Course readings will include work by W.B. Yeats, Austin Clarke, Michael Longley, Seamus Heaney, Eiléan Ni Chuilleanáin, Eavan Boland, Ciaran Carson, and others. This is not a workshop course, but students will have the opportunity to respond artistically as well as analytically to the course readings.
Instructor(s): J. Arthur
Area: Humanities.

AS.220.430. Readings in Poetry: Lives of the Poets. 3.0 Credits.
Lives of the Poets: Hecht, Merrill, Sexton, Plath. "The intellect of man is forced to choose / perfection of the life, or of the work," wrote Yeats. This course examines important intersections between the life and the work in the poems and memoirs of four, biographically interconnected poets. Poems treating subjects of depression and mental illness (Hecht, Sexton, Plath), the terror of war (Hecht), the depredations of disease (Merrill), and suicide (Sexton, Plath), find their sources in these poets fascinating—and, to varying degrees, troubled—lives.
Instructor(s): D. Yezzi
Area: Humanities.
AS.220.431. Readings in Fiction: Origins of the Short Story. 3.0 Credits.
This course will trace the development of the short story beginning with its tentative emergence from the shadow of the novel, through the early commercial period triggered by the invention of inexpensive newsprint, and to its full maturation at the turn of the 20th century. Works by E.T.A. Hoffmann, Heinrich Von Kleist, Alexander Pushkin, Nikolai Gogol, Ivan Turgenev, Guy de Maupassant, Henry James, Anton Chekhov, and Edith Wharton.
Instructor(s): T. Davies
Area: Humanities.

AS.220.432. Readings in Fiction: Innovators of the Short Story. 3.0 Credits.
In this class, we'll look at particularly influential writers who've had a lasting effect on the form of the short story, reshaping it through their own idiosyncratic vision. Authors may include Hawthorne, Kafka, Chekhov, Babel, Joyce, Borges, O'Connor, Welty, Barthelme, Paley, and Munro.
Instructor(s): R. Puchner
Area: Humanities.

AS.220.434. Readings in Poetry: The Mind in Motion: The Rhetoric of Poetry. 3.0 Credits.
This course examines how argument and formal thought shape poetry. Through class discussion about readings ranging from Donne to Dickinson to contemporary poets, and through critical and creative exercises, students will explore poems that reveal not only feeling and observation, but also the architecture of the analytical mind at work.
Instructor(s): D. Malech
Area: Humanities.

AS.220.435. Readings in Poetry: The Romance Tradition. 3.0 Credits.
A writer's survey of the medieval romance and of the subsequent poetry that it inspired. Course readings will include Sir Gawain and the Green Knight, The Death of King Arthur, and romances by Chretien de Troyes, as well as poetry by Spenser, Tennyson, and Robert Browning. This is nota workshop course, but students will have the opportunity to respond artistically as well as analytically to the course readings.
Instructor(s): J. Arthur
Area: Humanities.

AS.220.436. Readings in Fiction: A Writer's Journal. 3.0 Credits.
We will study the role journals play in the work of Virginia Woolf, Franz Kafka, Rainer Maria Rilke, and Anton Chekov. Readings include novels, stories, and diaries.
Instructor(s): J. McGarry
Area: Humanities.

AS.220.437. Creating the Poetry Chapbook. 3.0 Credits.
Students will build on previous work in the major by completing a project of sustained length, depth, and cohesion (15 - 25 pages) in their final semester. Application only; Advanced Poetry prerequisite.
Prerequisites: AS.220.400
Instructor(s): D. Malech
Area: Humanities.

AS.220.438. Readings in Poetry: Of Late: Poetry & Social Justice. 3.0 Credits.
In this Community-Based Learning course, students will explore poetry of social and political engagement in partnership with high-school age writers from Writers in Baltimore Schools. Participants will put learning into practice by organizing community conversation, reflection, and collaboration. Participation in some events outside of class time will be required.
Instructor(s): D. Malech
Area: Humanities.

AS.220.439. Readings in Fiction: Caribbean Voices. 3.0 Credits.
Caribbean history is reflected in the literature of emigration and collapse of empire. We'll study novels by Naipaul, Rhys, and other 20th century authors.
Instructor(s): W. Biddle
Area: Humanities
Writing Intensive.

AS.220.441. Readings in Poetry: Shakespeare and Company. 3.0 Credits.
A study of three of Shakespeare's plays, and of some of the most important creative responses to these plays by modern writers, such as Auden and Stoppard. Students will familiarize themselves with Shakespeare's continuing place in contemporary culture, and write short critical responses; they will also write a longer creative work that in some way transforms one of Shakespeare's plays.
Instructor(s): M. Salter
Area: Humanities.

AS.220.442. Readings in Fiction: Narrative Strategies of Jane Austen. 3.0 Credits.
We will read the major novels with the aim of detecting the chief patterns and devices the author uses to make the familiar and ubiquitous marriage plot suspenseful and gripping. Writing Seminars Majors only
Prerequisites: AS.220.105 AND AS.220.106 AND AS.220.200
Instructor(s): J. McGarry
Area: Humanities.

AS.220.443. Readings in Poetry: International Voices. 3.0 Credits.
International voices will combine the workshoping of poems by students with a study of contemporary poems written by black British writers and British writers in dialect African-American writers, Caribbean writers, and Indian and South African poets who are writing in English. The study of broad themes and subjects will be combined with a particular appreciation of linguistic and acoustic matters - which means among other things that time will be spent listening to and evaluating recordings of the poets concerned. Writing Seminars Majors Only
Prerequisites: AS.220.105 AND AS.220.106 AND AS.220.201
Instructor(s): A. Motion
Area: Humanities.

AS.220.444. Divided Loyalties: Translating Poetry. 3.0 Credits.
"Translation is impossible" and "All is translation": between these rival claims literary translating takes place. In this workshop course, students will translate a foreign-language poet of their choice and learn to place their approach to translating within the appropriate historical and theoretical contexts.
Prerequisites: AS.220.105 AND AS.220.106 AND AS.220.201
Instructor(s): C. Childers
Area: Humanities.
AS.220.445. Readings in Fiction: Novels about Journalism. 3.0 Credits.
Fiction writers writing about nonfiction writers: Miss Lonelyhearts, by Nathanael West; Bel Ami, by Guy de Maupassant; Psmith, Journalist, by P.G. Wodehouse; Scoop, by Evelyn Waugh; The Shipping News, by E. Annie Proulx.
Instructor(s): W. Biddle
Area: Humanities.

AS.220.446. Readings in Fiction: The Art of Fiction: the Novels of Henry James and Robert Louis Stevenson. 3.0 Credits.
Given the significant differences between their aims and styles as novelists - James the great investigator of the interior life, and Stevenson the equally great exponent of the adventure story - it's somewhat surprising to find the two men were good friends who admired one another's work. This course will use their friendship as a starting point to explore their novels in general, while paying particular attention to their narrative techniques; the novels under discussion will include Daisy Miller, Turn of the Screw, Portrait of a Lady, Treasure Island, Dr. Jekyll and Mr. Hyde, and Kidnapped. Students will also be asked to create original work that both responds to and takes off from their reading of these books.
Instructor(s): A. Motion
Area: Humanities.

AS.220.447. Theater and Social Concern. 3.0 Credits.
In this Community-Based Learning course, students will explore theatre and areas of social concern in partnership with high-school age writers from Writers in Baltimore Schools. Participants will put learning into practice by organizing community conversation, reflection, and collaboration. Participation in some events outside of class time will be required.
Instructor(s): D. Yezzi
Area: Humanities.

AS.220.448. Readings in Fiction: Hybrid Forms. 3.0 Credits.
We will read essays that have the texture and imagination of a short story; stories that are closer to poems, journalists who use the tools common to fiction, and novelists whose work straddles the line between autobiography and fiction. Our reading for the semester will be based around broad, thematic concerns. We will discuss the relationship between form and content, the ethics of narration, and ultimately, how we can apply the tools and techniques of the writers we've read to our own creative and critical writing. Students will be expected to write short, critical responses to the readings as well as generate a substantial body of creative text. At the end of the semester, students will submit a portfolio that includes one extended work of creative writing, along with a critical essay.
Instructor(s): D. Mengestu
Area: Humanities
Writing Intensive.

AS.220.449. Readings in Poetry: Exploring Baltimore Through Poetry. 3.0 Credits.
Students in this course will write poems based on an exploration of Baltimore itself: weekly assignments will require the students to get off campus, visit specific sites around town, and craft their observations into original poems. Course readings will include work by Baltimore authors past and present; other readings, drawn from further afield, will take up the question of what it means to explore a city. Writing Seminars majors only.
Prerequisites: AS.220.105 AND AS.220.106
Instructor(s): J. Arthur
Area: Humanities.

AS.220.451. Readings in Fiction: Doing Likewise: Imitation, Continuation, Updating, Upending. 3.0 Credits.
In this course, we will look at stories and novels that, in one way or another, riff on the work of other authors. We'll consider both the old work and the new. Written assignments will consist of doing the same.
Prerequisites: AS.220.105 AND AS.220.106 AND AS.220.200
Instructor(s): A. McDermott
Area: Humanities.

AS.220.501. Independent Study. 3.0 Credits.
Ordinarily no more than one independent study course may be counted among the eight Writing Seminars courses presented for graduation.
Instructor(s): A. McDermott; D. Yezzi.

AS.220.502. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): Staff.

AS.220.505. Writing Seminars Internship. 1.0 Credit.

AS.220.506. Writing Seminars Internship. 0.0 - 3.0 Credits.
Instructor(s): T. Davies.

AS.220.507. Honors Thesis. 3.0 Credits.
Permission Required.

AS.220.508. Honors Thesis. 0.0 - 3.0 Credits.
Department Permission Required.

AS.220.509. Practicing Journalism Internship. 1.0 Credit.
This internship is given in conjunction with local media and must be taken on a satisfactory/unsatisfactory basis. It covers many aspects of the operation of a metropolitan newspaper or magazine or TV station.
Permission Required. Satisfactory/ Unsatisfactory only.
Instructor(s): T. Davies.

AS.220.510. Practicing Journalism. 1.0 Credit.
Permission Required.

AS.220.513. Teaching Writing. 3.0 Credits.
Permission Required.

AS.220.592. Internship - Summer. 1.0 Credit.
Instructor(s): T. Davies.

AS.220.594. Practicing Journalism Internship. 1.0 Credit.
Instructor(s): D. Basford; J. Arthur; J. McGarry; T. Davies; W. Biddle.

AS.220.596. Teach Writing-Internship. 1.0 Credit.
Instructor(s): S. Dixon.

AS.220.598. Independent Study. 3.0 Credits.
Instructor(s): G. Blake; G. Williamson; J. McGarry; T. Davies.

A study of Modernism focusing on long poems and poem sequences by Stein, Pound, Eliot, Rukeyser, Tolson, and others. Coursework will include completion of a long poem or poem sequence.
Instructor(s): D. Malech.

The central concern of this course is to read, study, think about, and discuss several novels and short story collections, paying special attention to the voice and structural techniques these authors have invented to create compelling works. Restricted to Graduate Students.
Instructor(s): M. Klam
Area: Humanities.
We will examine a number of classic and contemporary coming-of-age novels. Students will compose their own: an original work of fiction that may well described as such.
Instructor(s): A. McDermott
Area: Humanities.

This course will look at the ways in which poetry finds words to express moments of vision and self-forgetting. Ranging from the Elizabethans to the present day, it will begin by looking at poetic manifestos by Sidney and Shelley (among others), and explore the ways in which they require poetry to engage with what cannot easily be put into words, then go on to consider: poems about religious transcendence; poems about rapturous communication with nature; visionary poems; dream poems; poems about ghosts and haunting; and poems which explore the possibility of saying the unsayable. Donne and other Metaphysical poets, Wordsworth, Dickinson, Christina Rossetti, Whitman, Hardy, Edward Thomas, T. S. Eliot, and Seamus Heaney will be among those poets discussed. Workshop time will be divided equally between critical discussion, and the presentation of original work by students.
Instructor(s): A. Motion
Area: Humanities.

AS.220.623. Fiction Workshop.
Discussion and critique of fiction manuscripts by students enrolled in the M.F.A. program. Some assignments possible.
Instructor(s): D. Evans.

AS.220.624. Graduate Fiction Workshop.
Discussion and critique of fiction manuscripts by students enrolled in the MFA program. Some assignments possible.
Instructor(s): A. Motion.

AS.220.625. Poetry Workshop.
Discussion and critique of poetry manuscripts by students enrolled in the M.F.A. program. Some assignments possible.
Instructor(s): A. Motion.

AS.220.626. Graduate Poetry Workshop.
Discussion and critique of poetry manuscripts by students enrolled in the MFA program. Some assignments possible.
Instructor(s): D. Yeizzi.

A study of three major poets--Caribbean, Irish, and Russian--who self-identified with at least two cultures. We'll examine these poets' literary friendship and their shared engagement with subjects such as tyranny, empire, home, exile, and the English language. Exploration of these poets' shared debt to a predecessor, Robert Frost, and the debt owed to them by younger poets, will lead to students' own original projects in poetry and prose.
Instructor(s): M. Salter
Area: Humanities.

We will read all--or most--of Chekhov's short stories, his "notebook," as well as the letters that have been translated into English.
Instructor(s): J. McGarry.

A study of three major poets (English, Irish, American) who each introduced signature tones, techniques, and themes in modern poetry. Some other figures, such as Louise Bogan and the World War I poets, may be discussed.
Instructor(s): M. Salter.

AS.220.646. Graduate Readings in Pedagogy: Teaching Fiction and Poetry.
A graduate course designed to develop both close reading and genre study, and to support the teaching of Introduction to Fiction and Poetry (IFP) I and II. Readings in selected works of American, English, and European poetry and short fiction. Course required by all graduate students in fiction and poetry.
Instructor(s): J. Arthur; J. McGarry; R. Puchner
Area: Humanities.

This course focuses on three poets whose individual relationships with form, inspiration, and innovation continue to shed light on the poetic process.
Instructor(s): D. Malech
Area: Humanities.

Based on a close reading of major texts, this course will look at the ways in which Romantic and port-Romantic British poetry deals with the passage of time, how it creates elegiac structures, and how it records various kinds of loss: the loss of self, the loss of traditional consolations (especially in terms of the environment), and the threatened loss of poetry itself. Students will be encouraged to respond creatively, as well as critically. Restricted to graduate students in the MFA program.
Instructor(s): A. Motion
Area: Humanities.

AS.220.651. Readings in Fiction: Five from the Fifties.
We will examine five American writers who were emerging or thriving in the middle of the 20th century: John Cheever, Bernard Malamud, Vladimir Nabokov, Jean Stafford, John Updike. We will read short stories by all five, as well as the following novels: Malamud's The Assistant, Nabokov's Lolita and Pale Fire. Restricted to graduate students in the MFA program.
Instructor(s): B. Leithauser
Area: Humanities.

This course will look at the way poets have responded to the environment, from the early Romantic period to the present day. In the process, it will study and show how the role of the natural world in poetry has changed from being a cause for celebration and a mirror for self-scrutiny, into a way of continuing these things while also expressing anxiety about the effects of global warming any other dangers to the health of the planet. Poets included in the discussion will include Wordsworth, Clare, Hopkins, Frost, Auden, Hughes and Heaney.
Instructor(s): A. Motion
Area: Humanities.

Which books do writers often foist on other writers, telling them "You have to read this"? In this course, we'll look at books that have yet to find much popular appeal, but which writers often speak about in reverential tones. Authors may include James Salter, Paula Fox, Dezső Kosztolányi, J.L. Carr, Juan Rulfo, Tom Drury, Christina Stead, Evan S. Connell, Leonard Gardner, Joy Williams, and Penelope Fitzgerald.

Instructor(s): R. Puchner
Area: Humanities.

AS.220.654. Readings in Fiction: Rediscovered Masters.

Readings from modern novels and collections of short fiction which, however well received at time of publication, fell into subsequent eclipse before undergoing something of a revival. Many of the titles will be drawn from the series of New York Review of Books Classics.

Instructor(s): B. Leithauser
Area: Humanities.


A study of the interplay of the line and the sentence in poetry, with an emphasis on syntax. Some prose works will also be used for context. Poets employing syntax with great verve and precision, whether they obey or disrupt the rules, will be read in order to inform students' own stylistic choices.

Instructor(s): J. Arthur
Area: Humanities.

AS.220.656. Readings in Fiction: Doing Likewise: Imitation, Continuation, Updating, Upending.

In this course, we will look at stories and novels that take their inspiration from other authors, mostly Shakespeare. We'll consider both the old work and the new. Written assignments will require class members to do likewise.

Instructor(s): A. McDermott
Area: Humanities.


A study of major figures, including Dickinson, Moore, Bishop, Clampitt, Brooks, and others. The theme of place and displacement will be a focus.

Instructor(s): M. Salter
Area: Humanities.


"Translation is impossible" and "All is translation": between these rival claims literary translating takes place. In this workshop course, students will translate a foreign-language poet of their choice and learn to place their approach to translating within the appropriate historical and theoretical contexts. Writing Seminars majors only. Special Notes: Students should have reading knowledge of at least one foreign language.

Instructor(s): C. Childers
Area: Humanities.

AS.220.800. Independent Study.

Instructor(s): Staff.


Instructor(s): J. Arthur.

Cross Listed Courses

Film and Media Studies

AS.061.148. Storytelling for Film and Fiction. 3.0 Credits.

Through the analysis of narrative films, short fiction, myths, fairy tales, and ghost stories, and through the workshopping of their own creative writing, students will explore the art and science of "a good story well told." This course is an essential primer for upper-level screenwriting.

Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.205. Introduction to Screenwriting. 3.0 Credits.

In this course we will explore the basic principles of visual storytelling in narrative film as they apply to the design and execution of a screenplay. During the course of the semester, each student will work on different writing exercises while they search for their specific story and the best way to approach it. We will study different narrative tools and methods of screenwriting by analyzing films to ascertain how they work or fail to do so at script level. Through in-class critiques, group discussions and one-on-one sessions, students will apply these techniques to their own work as they undergo the process of designing, breaking down, outlining and writing a screenplay for a short film. In-class analysis and debate on the strengths and challenges posed by the students' work will help shape the thematic emphasis of the second half of the course.

Instructor(s): Staff
Area: Humanities
Writing Intensive.

AS.061.316. Characters for the Screenplay. 3.0 Credits.

A workshop devoted to creating complex characters for the screen. Students will examine memorable film characters from the silent era to the present, with attention to how these characters are revealed through both the drama and the mise en scene. Weekly screenings. Short critical and creative written exercises and a longer, creative final project. $50 Lab Fee.

Prerequisites: AS.061.148 OR AS.061.270 OR AS.061.205

Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.

AS.061.371. Unrealities: The Fantastic in Film & Fiction. 3.0 Credits.

The fantastic, the absurd, the blackly comic in films by Cocteau, Hitchcock, and others; and in the short fiction of Barthelme, Cortázar, Hrabal, and others. Several short creative exercises and a longer, creative final project. $50 Lab Fee.

Instructor(s): L. Bucknell
Area: Humanities
Writing Intensive.
AS.061.373. Intermediate Dramatic Writing: Film. 3.0 Credits.
This course will explore different approaches towards understanding the fabric of story as it pertains to film. Students will be exposed to key challenges in conceiving, structuring and executing a compelling, memorable and vibrant feature-length screenplay. By studying key examples, we will discuss possible solutions to these issues. In every class, students will share their work in progress and will help each other find approaches or solutions to their specific challenges and issues. We will analyze films with screenplays that effectively play with the form to create lasting, thought-provoking and affecting stories. Through in-class critiques, group discussions and one-on-one sessions, students will apply new tools and approaches to their own work as they undergo the process of designing, breaking down, outlining and writing a full step outline, a beat sheet and the first ten pages of a feature length screenplay. As the semester progresses, in-class analysis and debate on the strengths and challenges posed by the students’ work will shape the thematic emphasis of each class.
Prerequisites: AS.220.204 OR AS.061.205 OR AS.061.270
Instructor(s): R. Buso-garcia
Area: Humanities
Writing Intensive.

AS.061.376. Arts and Culture Journalism: Interactive Media, Online Publishing. 3.0 Credits.
Students will participate in the ongoing creation of BmoreArt.com, an online arts and culture publication that serves the Baltimore community. In conjunction with visiting professionals, students will investigate the Baltimore cultural community and create different types of editorial content using interactive media including film, video, sound, and writing. Students will produce creative content utilizing their individual areas of expertise - such as visual art, art history, music, literary arts, film, and theater - while working together as a professional organization. A strong emphasis will be placed on the student's collaborative participation and creative experimentation. Students with differing backgrounds in media will approach this project from unique perspectives, which will be valued and cultivated. Students with previous experience in journalism are welcome. An introductory writing or film course is suggested as a prerequisite.
Instructor(s): C. Ober
Area: Humanities
Writing Intensive.

AS.061.404. Advanced Screenwriting. 3.0 Credits.
Intensive workshop course where students will write both a first draft and a full revision of a feature length screenplay. Classes will be designed and centered on the specific challenges of the students’ works-in-progress, with an emphasis on exploring and discussing different narrative approaches and solutions that will enhance their writing and revision processes. Select films will be screened and analyzed as they pertain to the students’ scripts. Students will aim to have a polished draft of their screenplay to be submitted to industry-recognized screenwriting labs at the end of the semester.
Instructor(s): A. Rodgers
Writing Intensive.

Anthropology
AS.070.203. Healing: Politics and Poetics. 3.0 Credits.
Metaphors of health and illness; individual and social. The body in pain and the body politic. Ethnographies of historical memory vis-à-vis medicine, epidemics, sacredness, shamanism, terror, humanitarianism, truth and reconciliation.
Instructor(s): J. Obarrio
Area: Humanities, Social and Behavioral Sciences.

AS.070.337. Digital Media, Democracy, and Control. 3.0 Credits.
This course examines how digital technologies enable new publics that circumvent state and social controls as well as how they are mobilized to confirm existing racial, gendered, and political hierarchies.
Instructor(s): L. Humphreys
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

German Romance Languages Literatures
AS.211.472. Barbers and countesses: conflict and change in the Figaro trilogy from the age of Mozart to the 20th century. 3.0 Credits.
2016 marks the bicentennial of Rossini’s irreverent masterwork The Barber of Seville, which premiered in Rome in February 1816. Thirty years earlier, in 1786, Mozart’s The Marriage of Figaro had opened in Vienna. The two operas, based on the first two plays of Beaumarchais’ controversial “Figaro trilogy”, stage conflicts of class and gender, challenging the assumptions of the aristocracy as well as the ludicrous pretentions of the raising bourgeoisie. The same themes inform the post-modern portrayal of the past in John Corigliano’s The Ghosts of Versailles (1991), which ideally completes the musical afterlife of the trilogy. By studying how the plays were adapted to the opera stage within their different cultural and historical contexts, the course will explore the representation of the ideological, social, and political turmoil that, eventually, culminated in the French Revolution. The course will also include field trips and screenings of movies such as Stanley Kubrick’s Barry Lyndon (1975) and Milos Forman’s Amadeus (1984). This course may be used to satisfy major requirements in both the French and Italian majors.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.211.479. Dante’s Journey through the Afterlife. 3.0 Credits.
Dante’s Divine Comedy presents a complete picture of the medieval world-view in all its aspects: physical (the structure of the cosmos), historical (the major actors from Adam to Dante himself) and moral (a complete system of right and wrong). Dante shows how the Christian religion portrayed itself, other religions, the nature of God, humans, angels and devils, and human society. We will explore these topics both from the viewpoint of Dante’s own time, and in terms of its relevance to our own societal and cultural concerns.
Instructor(s): E. Refini
Area: Humanities
Writing Intensive.

AS.212.205. Winter Is Coming: Writing and Rewriting French Dark Ages. 3.0 Credits.
This course will not aim at drawing the exhaustive literary landscape of French Middle Ages, neither will it be a Comparative Literature or History class. It may be considered a gateway to French Medieval literature, given that the Modern Fantasy has obviously improved the last decades, the latter being built as a rewriting of Medieval themes and Western European folklore. Looking at texts originally written in Old French, including prose and poetry, but also at the French Medieval iconography, we will try to understand the old roots of the Modern and so popular (but sacrificing) Fantasy Literature. Basic French will be required.
Instructor(s): M. Alhinho
Area: Humanities.
AS.213.361. The Holocaust in Film and Literature. 3.0 Credits.
How has the Holocaust been represented in literature and film? Are there special challenges posed by genocide to the traditions of visual and literary representation? Where does the Holocaust fit into the array of concerns that the visual arts and literature express? And where do art and literature fit into the commemoration of communal tragedy and the working through of individual trauma entailed by thinking about and representing the Holocaust? These questions will guide our consideration of a range of texts — nonfiction, novels, poetry — in Yiddish, German, English, French and other languages (including works by Elie Wiesel, Primo Levi, and Isaac Bashevis Singer), as well as films from French documentaries to Hollywood blockbusters (including films by Alain Resnais, Claude Lanzmann, and Quentin Tarantino). All readings in English.
Instructor(s): S. Spinner
Area: Humanities

AS.213.387. Major City, Minor Literature? Berlin in German-Jewish and Yiddish Literature. 3.0 Credits.

Between the two World Wars, a period of intense artistic and intellectual vitality, Berlin was an international center for theater, visual arts, and literature. Many important Yiddish-language writers were drawn to Berlin and, together with their German-language counterparts, produced a body of literature that explores issues of modernity and identity. By comparing works in Yiddish and German, we will learn about inter-War Berlin’s cultural diversity and richness, while also gaining insight into the particular issues of writing about Jewish identity in the 1920s, and the implications of writing in a minor language (Yiddish). We will read works by authors including Joseph Roth and Alfred Döblin in German, and Moyshe Kulbak and Dovid Bergelson in Yiddish. All texts will be in translation. Some questions we will explore include: • What is a minority/minor language or literature? • How did German and Yiddish interact in cultural and social spheres? • Can texts in different languages comprise a single body of literature? • What did it mean to be German and what did it mean to be Jewish? • Are assimilation and hybridity useful concepts? • Is there such a thing as Jewish modernism? • How did literature of the period respond to the rise of the Nazi party and the intensification of antisemitism?
Instructor(s): S. Spinner
Area: Humanities

AS.214.479. Dante Visits the Afterlife: The Divine Comedy. 3.0 Credits.
Dante’s Divina commedia is the greatest long poem of the Middle Ages; some say the greatest poem of all time. We will study the Commedia critically to find: (1) What it reveals about the worldview of late-medieval Europe; (2) how it works as poetry; (3) its relation to the intellectual cultures of pagan antiquity and Latin (Catholic) Christianity; (4) its presentation of political and social issues; (5) its influence on intellectual history, in Italy and elsewhere; (6) the challenges it presents to modern readers and translators; (7) what it reveals about Dante’s understanding of cosmology, world history and culture. We will read and discuss the Commedia in English, but students will be expected to familiarize themselves with key Italian terms and concepts. Students taking section 02 (for 4 credits) will spend an additional hour working in Italian at a time to be mutually decided upon by students and professor.
Instructor(s): W. Stephens
Area: Humanities
Writing Intensive.

AS.215.353. Women Writing in Latin America: Prose and Poetry by Sor Juana, Mistral, Lisoba, Pizarnik, Castellanos, and other poets. 3.0 Credits.
The first objective of the course is to train students in close reading and analysis of literary texts. The second objective is to read prose and poetry by some of the canonical texts in the Latin American tradition written by women. Taught in English.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.215.463. Borges: His Fiction and Critical Essays. 3.0 Credits.
This course will deal with close readings of Borges fictions and critical essays in order to determine how his thinking on the problem of writing and thinking is fictionalized in his stories.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

This course will focus on the art of writing poetry, the art of reading poetry and the poetics of each of the poets whose work is the textual matter of the course.
Instructor(s): S. Castro-Klaren
Area: Humanities
Writing Intensive.

AS.216.300. Contemporary Israeli Poetry. 3.0 Credits.
This course examines the works of major Israeli poets such as Yehuda Amichai, Nathan Zach, Dalia Rabikovitch, Erez Biton, Roni Somek, Dan Pagis, Yona Wollach, Yair Horwitz, Maya Bejerano, and Yitzhak Laor. Against the background of the poetry of these famous poets we will study recent developments and trends in Israeli poetry, including less known figures such as Mois Benarroch, Shva Salhoov and Almog Behar. Through close reading of the poems, the course will trace the unique style and aesthetic of each poet, and will aim at presenting a wide picture of contemporary Hebrew poetry.
Prerequisites: Students may receive credit for AS.216.300 or AS.300.413, but not both.
Instructor(s): N. Stahl; Z. Cohen
Area: Humanities

AS.216.342. The Holocaust in Israeli Society and Culture. 3.0 Credits.
This course examines the role of the Holocaust in Israeli society and culture. We will study the emergence of the discourse of the Holocaust in Israel and its development throughout the years. Through focusing on literary, artistic and cinematic responses to the Holocaust, we will analyze the impact of its memory on the nation, its politics and its self-perception.
Instructor(s): N. Stahl
Area: Humanities
Writing Intensive.
AS.216.370. Israel Through Prose. 3.0 Credits.
This course examines representations of various aspects of Israeli society and culture in contemporary Israeli prose. The course will follow both a thematic and chronological path in order to study the ways in which Israeli prose reflects political, ideological, social and cultural aspects of contemporary Israel. In this context, we will read works by several major authors such as: Agnon, Shabtai, Kahanah-Carmon, Oz, Kenaz, Yehoshua, Grossman, Castel-Bloom, Matalon, Laor, Kashua and Hoffmann. Students who sign up for section 2 will work an additional hour in Hebrew with Professor Cohen at a time mutually agreed upon by the professor and the students enrolled.-Carmon, Oz, Kenaz, Yehoshua, Grossman, Castel-Bloom, Matalon, Laor, Kashua and Hoffmann. Instructor(s): N. Stahl; Z. Cohen
Area: Humanities Writing Intensive.

AS.216.373. War in Israeli Arts and Culture. 3.0 Credits.
In this course we will study the various representations of what functions as one of Israel's most unifying and yet dividing forces: war. By analyzing literary and cinematic works as well as visual art and popular culture we will attempt to understand the role of war in shaping Israeli society, culture and politics. Topics such as commemoration and mourning, heroism, dissent and protest, trauma and memory and the changing image of the soldier will stand at the center of the course. Instructor(s): N. Stahl; Z. Cohen
Area: Humanities Writing Intensive.

AS.216.398. Zionism: Literature, Film, Thought. 3.0 Credits.
This course studies the relations between modern Hebrew and Israeli culture and Zionism. Based on a close reading of both literary and non-literary Zionist texts, we will explore the thematic, social and political aspects of the Zionist movement. The course focuses on primary sources and its main goal is to familiarize students with the various ways in which Zionism was formed and understood. In the last part of the semester we will investigate the different meanings of Post-Zionism through contemporary literary and non-literary texts as well as recent Israeli films. Instructor(s): N. Stahl; Z. Cohen
Area: Humanities

AS.216.412. The Divine in Literature and Cinema. 3.0 Credits.
This course studies various issues concerning literary and cinematic representations of the divine. We will investigate theoretical, theological, generic and aesthetic aspects of the topic and will familiarize ourselves with the general problem of the relation between religion, literature and cinema. Among the topics to be discussed are, negative theology in literature and film, theodicy and anti-theodicy, the question of religion and literary modernism, providence and narratology in the modern novel and in contemporary cinema. Instructor(s): N. Stahl.

AS.216.444. The Apocalypse in Literature and Film. 3.0 Credits.
"Everything which we loved is lost! We are in a desert" – this emotional assertion was the reaction to Kazimir Malevich's 1915 painting The Black Square, as the artist himself recalled it. This sentiment of fearing, warning and even witnessing the end of the world as we know it, will stand at the center of the course. We will study the literary and cinematic representations of this apocalyptic notion and investigate its theoretical, theological, physiological and aesthetic aspects. We will seek to trace the narrative dynamics as well as literary and cinematic means of apocalyptic representations in works from various periods, languages, cultures and religions. Among the issues to be discussed: what is the apocalypse, biblical apocalypse, dystopia and nostalgia, trauma and post trauma, war and the apocalypse, the Holocaust as the end of civilization, the atomic bomb, realism and anti-realism, political changes and the apocalypse in popular culture. Instructor(s): N. Stahl
Area: Humanities Writing Intensive.

Theatre Arts Studies
AS.225.324. Adaptation for the Stage. 3.0 Credits.
For aspiring playwrights, dramaturgs, and literary translators, this course is a workshop opportunity in learning to adapt both dramatic and non-dramatic works into fresh versions for the stage. Students with ability in foreign languages and literatures are encouraged to explore translation of drama as well as adaptation of foreign language fiction in English. Fiction, classical dramas, folk and fairy tales, independent interviews, or versions of plays from foreign languages are covered. Instructor(s): J. Martin
Area: Humanities Writing Intensive.

AS.225.330. Playwriting Strategies. 3.0 Credits.
A seminar and workshop in playwriting with Dr. Joe Martin, playwright and dramaturge. Student writers, developing their plays, will learn how to open up to the creative process, "brainstorm," refine their work, and shape it toward an act of artistic communication. Writer's techniques, such as attending to plot or "story," delineation of character, creating effective "dialog," even overcoming "writer's block," will be addressed. This course is designed to be complementary to – not a replacement for – playwriting classes in the Writing Seminars. Instructor(s): J. Martin Writing Intensive.

Humanities Center
AS.300.113. Freshmen Seminar: Drama and Gender in Shakespeare's England. 3.0 Credits.
In this seminar we will read male and female authored plays and discuss how they reflect contemporary social expectations in Tudor and Stuart England. Authors include William Shakespeare; Mary Sidney, Countess of Pembroke; Christopher Marlowe; Elizabeth Cary; Ben Jonson; and Mary Sidney, Lady Wroth. Instructor(s): E. Patton Area: Humanities.
AS.300.133. Freshmen Seminar: Women of Epic Fame in Literature and Drama, 800 BCE-1650 CE. 3.0 Credits.
From Homer's Odyssey to Shakespeare's Antony and Cleopatra, powerful women who achieve their ends by working from within the system are often overlooked or not fully explored. Our readings and discussions will foreground these women of fiction, while we also consider the social conditions of their living contemporaries. Readings will include: Homer's Odyssey (Penelope); Virgil's Aeneid (Dido); Dante's Inferno (Beatrice); Milton's Paradise Lost (Eve), and several accounts of Cleopatra in plays by Shakespeare and his contemporary women writers. Cross listed with Theater Arts, Writing Seminars, and WGS.
Instructor(s): T. Tower
Area: Humanities
Writing Intensive.

Comparative Thought and Literature
AS.300.139. Introduction to Intellectual History. 3.0 Credits.
This course offers a conceptual and historical introduction to Intellectual History. What makes the "history of ideas" different from the history of other objects? What, if anything, distinguishes the history of ideas from the history of philosophy? What is it exactly that we call "ideas"? In what sense do they have a history? These are examples of the kind of questions addressed in the course.
Instructor(s): P. Marrati
Area: Humanities.

Humanities Center
AS.300.143. Introduction to Comparative Literature. 3.0 Credits.
This course offers an introduction to the history, theory, and praxis of comparative literature. We will read texts from some of the founding figures of the discipline and look at the most recent debates in the field, including translation studies, literary theory, and world literature, among others. Particular attention will be given to the methodologies and problems of studying literatures in different linguistic traditions and the relation between literature and other areas of thought and culture, such as philosophy, art history, and psychoanalysis. Case studies in comparative approaches to literature will provide concrete examples to our discussions.
Instructor(s): L. Lisi
Area: Humanities.

Comparative Thought and Literature
AS.300.311. Introduction to Intellectual History. 3.0 Credits.
This course offers a conceptual and historical introduction to Intellectual History. What makes the "history of ideas" different from the history of other objects? What, if anything, distinguishes the history of ideas from the history of philosophy? What is it exactly that we call "ideas"? In what sense do they have a history? These are examples of the kind of questions addressed in the course.
Instructor(s): H. Sirin; P. Marrati
Area: Humanities.

AS.300.321. Rise of the Modern Short Story. 3.0 Credits.
A comparative tour of examples of short stories from three continents that emerged from earlier narrative forms in the 19th and 20th centuries. Attention will be given to new structural, rhetorical, and thematic concerns including the development of new sub-genres, e.g. fictions of detection, case histories, portraits of the artist, and the adaptation of several stories to newer media [at least 2 of the longer narratives translated to film will be screened]. A detailed syllabus of our readings will be available later in the summer; because there is no anthology that quite fits our needs, all the texts or translations, as well as critical and contextual notes will be supplied in digital forms. Note: there will also be an optional hour for questions & discussion TBA.
Instructor(s): R. Macksey
Area: Humanities
Writing Intensive.

AS.300.323. Shakespeare and Ibsen. 3.0 Credits.
William Shakespeare and Henrik Ibsen are the two most frequently performed playwrights in history, and both have been credited with reinventing drama: Shakespeare for the Elizabethan stage and Ibsen for the modern. In this course we will pair together plays by each author -- those that stand in an explicit relation of influence as well as those that share a significant set of concerns -- in order to investigate how each takes up and transforms key problems in the literary, political, and philosophical tradition for their own historical moment. Plays to be studied: by Shakespeare, A Midsummer Night's Dream, Hamlet, Othello, King Lear, The Tempest, A Winter's Tale; by Ibsen, St. John's Night, Hedda Gabler, Rosmersholm, The Wild Duck, The Master Builder, When We Dead Awaken.
Instructor(s): L. Lisi
Area: Humanities.

AS.300.337. The Tragic Tradition. 3.0 Credits.
This course offers a broad survey of tragic drama in the Western tradition, from its origins in ancient Greece to the twentieth century. In weekly lectures and discussion sections, we will study the specific literary features and historical contexts of a range of different works, and trace the continuities and transformations that shape them into a unified tradition. Key questions and themes throughout the semester will include what counts as tragic, the tragedy of social and political conflict, the bearing of tragedy on the meaning and value of life, the antagonistic relation between world and humans, the promises and dangers of tragedy for contemporary culture. Authors to be studied: Sophocles, Euripides, Seneca, Shakespeare, Racine, Goethe, Ibsen, Strindberg, Chekov, Brecht, Pirandello, and Beckett.
Instructor(s): L. Lisi
Area: Humanities.

AS.300.339. Introduction to Comparative Literature. 3.0 Credits.
This course offers an introduction to the history, theory, and praxis of comparative literature. We will read texts from some of the founding figures of the discipline and look at the most recent debates in the field, including translation studies, literary theory, and world literature, among others. Particular attention will be given to the methodologies and problems of studying literatures in different linguistic traditions and the relation between literature and other areas of thought and culture, such as philosophy, art history, and psychoanalysis. Case studies in comparative approaches to literature will provide concrete examples to our discussions.
Instructor(s): L. Lisi
Area: Humanities.
Humans Center
AS.300.363. Reading Judith Shakespeare: poetry and drama by women writers in Elizabethan England (ca 1558-1650). 3.0 Credits.
Virginia Woolf's account of the thwarted career of Shakespeare's hypothetical sister, Judith (in A Room of One's Own) frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, Mary Wroth, and others. Students will create fictional biographies of "Judith Shakespeare" and her literary accomplishments. Cross listed with English, Theater Arts, Writing Seminars, and WGS.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

Comparative Thought and Literature
AS.300.372. Dance and the Russian Avant-Garde. 3.0 Credits.
This course will explore the relationship between art and dance during the explosion of artistic creativity at the time of the Russian Revolution (1900s-1920s) as well as the influence of the Russian Avant-Garde on modern dance and theories of movement through the 20th century. We will examine how dance both gave physical form to aesthetic, philosophical and political ideas and catalyzed new forms of thinking about the human body and modern spaces. Lecture and discussion of readings and screenings will be paired with a weekly movement workshop in the dance studio that will introduce students to different forms and theories of avant-garde and modernist dance and movement theory. No prior dance experience or knowledge of Russian is required.
Instructor(s): A. Eakin Moss; C. Dinapoli
Area: Social and Behavioral Sciences.

Interdepartmental
AS.360.133. Freshman Seminar: Great Books at Hopkins. 3.0 Credits.
Freshman Seminar: Students attend lectures by an interdepartmental group of Hopkins faculty and meet for discussion in smaller seminar groups; each of these seminars is led by one of the course faculty. In lectures, panels, multimedia presentations, and curatorial sessions among the University's rare book holdings, we will explore some of the greatest works of the literary and philosophical traditions in Europe and the Americas. Close reading and intensive writing instruction are hallmarks of this course; authors for Fall 2018 include Homer, Boethius, Machiavelli, Shakespeare, Descartes, Apha Behn, Mary Shelley, Mozart, Douglass, and Woolf.
Instructor(s): E. Patton; E. Refini; S. Weiss; W. Egginton
Area: Humanities
Writing Intensive.

Center for Africana Studies
AS.362.304. Reading and Writing Black Poetry. 3.0 Credits.
This course is an exploration of twentieth and twenty-first century black poetry and poetics. Readings include Paul Laurence Dunbar, Langston Hughes, Gwendolyn Brooks, Amiri Baraka, Sonia Sanchez, Nikki Giovanni, Lucille Clifton, Rita Dove, Natasha Trethewey, Terrance Hayes, Claudia Rankine, and Danez Smith. Texts will be mined for theme as well as formal technique as a basis for poetic experimentation.
Instructor(s): A. Gunn
Area: Humanities
Writing Intensive.

Study of Women, Gender, Sexuality
AS.363.445. Reading Judith Shakespeare: Women and Gender in Elizabethan England. 3.0 Credits.
If Shakespeare had a sister who went to London to be a writer, what would she write? Virginia Woolf's account of the thwarted career of Shakespeare's hypothetical sister, Judith, in A Room of One's Own frames our reading of plays and poetry by Shakespeare and contemporary women writers, including Isabella Whitney, Elizabeth Cary, Mary Sidney, Aemelia Lanyer, and Mary Wroth. Working within a selected historical context, students will create fictional biographies of "Judith Shakespeare," including her perspective on our identified authors and a sample or description of Judith's own literary accomplishments. Secondary course readings will reflect contemporary economic, political, and religious contexts.
Instructor(s): E. Patton
Area: Humanities
Writing Intensive.

Program in Museums and Society
AS.389.311. From Treasure House to Production House: Exploring New Roles for the Museum in the 21st Century. 3.0 Credits.
Students work with the Director of, the Peale Center for Baltimore History and Architecture as it reinvents itself as a museum for the twenty-first century. Involves working with community story-tellers in residence. Extra time is to allow for field trip travel - most days class runs 1:30-3:50.
Instructor(s): Staff
Area: Humanities, Social and Behavioral Sciences.

AS.389.329. Author/Canon/Archive. 3.0 Credits.
Why are some literary works from the past reprinted, anthologized, and considered worthy of study, but not others? Why are some works "lost" and some "rediscovered," while others simply fall out of favor? Focusing on nineteenth- and early twentieth-century American literary culture, we will use rare books and archival materials from JHU collections to examine Edgar Allan Poe, Walt Whitman, Emily Dickinson, Stephen Crane, Charles Chesnutt, and Zora Neale Hurston, along with a few authors you've never heard of, in terms of the relationship between authorship, stewardship, and status.
Instructor(s): G. Dean
Area: Humanities, Social and Behavioral Sciences.

AS.389.343. Edgar Allan Poe and His Afterlives. 3.0 Credits.
We will investigate the creative development and iconic afterlife of a canonical American author, Edgar Allan Poe, as a case-study in literary legacy and cultural heritage. What is the lifespan of a literary work, and how do works "stay alive" for later generations? Students will examine rare Poe materials and create a digital exhibition of Poe archives.
Instructor(s): G. Dean
Area: Humanities, Social and Behavioral Sciences.

AS.389.359. Modernist Networks in the Archive. 3.0 Credits.
This class examines three American writers who built important and enduring networks, Ezra Pound, Gertrude Stein, and Langston Hughes. We will investigate the artefactual traces of their networks through recently acquired special collections materials and digital representations, in order to address questions about aesthetics and style, politics and power, race and gender, and many other issues that affect the literary archive.
Instructor(s): G. Dean
Area: Humanities.
Center for Leadership Education
EN.661.110. Professional Writing and Communication. 3.0 Credits.
This course teaches students to communicate effectively with a wide variety of specialize and non-specialized audiences. Projects include production of resumes, cover letters, proposals, instructions, reports, and other relevant documents. Class emphasizes writing clearly and persuasively, creating appropriate visuals, developing oral presentation skills, working in collaborative groups, giving and receiving feedback, and simulating the real world environment in which most communication occurs. Not open to students who have taken EN.661.110 as Technical Communication or Professional Communication for Science, Business and Industry or EN.661.120 Business Communication. No audits. Prerequisites: Students may take EN.661.110 or EN.661.120, but not both.
Instructor(s): Staff
Writing Intensive.

Whiting School of Engineering
http://engineering.jhu.edu/
Engineering education at Johns Hopkins began with the establishment of an engineering school in 1913. Throughout its history, the Whiting School has maintained close ties with the Krieger School of Arts and Sciences, which has led pioneering education and research since the Faculty of Philosophy was assembled in 1876. The Whiting School of Engineering provides its students with an education and research environment that fosters a lifetime ability to create and apply new knowledge and to contribute to their professions.

The Whiting School offers 10 ABET-accredited programs in engineering leading to the Bachelor of Science degree: biomedical engineering, chemical and biomolecular engineering, civil engineering, computer engineering, computer science, electrical engineering, engineering mechanics, environmental engineering, materials science and engineering, and mechanical engineering. The school also offers B.S. and B.A. degrees in applied mathematics & statistics as well as B.A. degrees in biomedical engineering, computer science, and general engineering.

Our commitment to advanced study and research yields outstanding programs that lead to masters and doctoral degrees. In the descriptions that follow, each department lists its faculty and their research, research facilities, graduate programs, and the elementary and advanced courses they offer. More details can be obtained from the departmental websites, through the Whiting School homepage at http://engineering.jhu.edu.

Applied Mathematics and Statistics
http://engineering.jhu.edu/ams
The Department of Applied Mathematics and Statistics is devoted to the study and development of mathematical disciplines especially oriented to the complex problems of modern society. A broad undergraduate and graduate curriculum emphasizes several branches of applied mathematics: Probability, the mathematical representation and modeling of uncertainty; Statistics, the analysis and interpretation of data; Operations Research, the design, analysis, and improvement of actual operations and processes; Optimization, the determination of best or optimal decisions; Discrete Mathematics, the study of finite structures, arrangements, and relations; Scientific Computation, which includes all aspects of numerical computing in support of the sciences; and Financial Mathematics, the modeling and analysis of financial markets.

Probability and Statistics is treated in the curriculum as a single general area, dealing in a unified way with theory and methodology for probabilistic representation of chance phenomena, applications of stochastic modeling to physical and social sciences, formulation of statistical models, fitting of statistical models to data, and interpretation of data. Operations Research and Optimization represents a second general area, dealing in unified fashion with the application of optimization theory, mathematical programming, computer modeling, stochastic modeling, and game theory to planning and policy problems such as scheduling, allocation of resources, and facility location. Discrete Mathematics includes the traditional themes of graph theory and combinatorics, as well as newer topics arising from modern technological and theoretical developments. The fourth general area, Computational and Applied Mathematics, covers topics pertaining to computing, numerical analysis, advanced matrix analysis, and mathematical modeling. Financial Mathematics addresses applications by making use of applied mathematics techniques and models from many of the above-mentioned areas.

In its fundamental role of representing applied mathematics at Johns Hopkins University, the Department of Applied Mathematics and Statistics is complemented by the Department of Mathematics, with its differing emphasis. Located in the School of Engineering, the Department of Applied Mathematics and Statistics fulfills a special integrative role, stemming in part from the affinity of engineers for applied mathematics and in part from the increasing need for interaction between science and engineering. The mathematical sciences, especially the mathematics of modeling, provide a common language and tools through which engineers can develop closer alliances and cooperation with other scientists.

The department's degree programs include foundational and introductory course work drawing from all areas of the curriculum, along with specialized course work in areas such as probability, statistics, operations research, and optimization. Students, in consultation with their advisors, may develop challenging individual programs. The department emphasizes mathematical reasoning, mathematical modeling, abstraction from the particular, and innovative application all in a problem-oriented setting. The aim is to prepare graduates for professional careers in the mathematical sciences and related areas, in academic institutions as well as in governmental, industrial, and research organizations.

The undergraduate major in applied mathematics and statistics leads to the B.A. and B.S. degrees. The graduate program leads to the M.A., M.S.E., and Ph.D. degrees. In addition, under a combined bachelor's/master's program, exceptionally able undergraduates may be admitted early to simultaneous graduate work.

Facilities
The department is located in Whitehead Hall. Office space and liberal access to computing facilities are provided to resident graduate students. A Reading/Commons Room provides the opportunity for informal discussions among faculty and graduate students. The university's Milton S. Eisenhower Library maintains an excellent collection of literature in the mathematical sciences, including all of the important current journals.

Undergraduate Programs
The undergraduate major in applied mathematics and statistics may serve as preparation for employment as an applied mathematician, for graduate study in applied mathematics or related areas, or as a general
quantitative training for a career in business, medicine, or other fields. An undergraduate major in applied mathematics and statistics takes an individually tailored program of courses within the department and in the Department of Mathematics (calculus, and perhaps further courses such as differential equations, analysis, complex variables, topology, and modern algebra) and electives in science and engineering. By suitable choice of electives, heavy concentration in a specific field of engineering is possible.

In order to develop a sound program suited to individual needs and interests, the student should consult regularly with the faculty advisor. Additional advisory information, including information about the areas of focus described below, may be obtained from the department office.

With the advice and consent of the faculty advisor, each student constructs an individualized program meeting the requirements below. A written copy of the program should be on file with the faculty advisor, with whom it can be revised and updated from time to time.

**Bachelor’s Degrees**

Departmental majors can earn either the B.A. or the B.S. degree by meeting the general university requirements and the general requirements of the School of Engineering (see Requirements for a Bachelor's Degree (p. 7), including Writing Requirement, in this catalog), and the departmental requirements.

All courses used to meet the following departmental requirements must be taken for a letter grade and passed with grade of C- or higher:

1. **Calculus I, II, and III**
   - AS.110.106 Calculus I (Biology and Social Sciences) 4-8
   - & AS.110.107 Calculus I (For Biological and Social Science) 4-8
   - or AS.110.108 Calculus I (For Physical Sciences and Engineering) 4
   - & AS.110.109
   - or AS.110.113 Honors Single Variable Calculus

2. **Linear Algebra and Differential Equations**
   - Two courses in linear algebra and differential equations. These two courses must, collectively, touch both areas. There are two ways to meet this two-course requirement:

   **Option A**
   - Choose one of the following for Linear Algebra:
     - AS.110.201 Linear Algebra 4
     - or AS.110.212 Honors Linear Algebra
   - Choose one of the following for Differential Equations:
     - AS.110.302 Differential Equations and Applications 4
     - or AS.110.417 Partial Differential Equations
     - or EN.553.386 Scientific Computing: Differential Equations
     - or EN.553.388 Scientific Computing: Differential Equations in Vector Spaces
     - or EN.553.391 Dynamical Systems

   **Option B**
   - EN.553.291 Linear Algebra and Differential Equations 4
   - Plus an additional course in linear algebra or differential equations chosen from among the following:
     - EN.553.385 Scientific Computing: Linear Algebra 4
     - or EN.553.386 Scientific Computing: Differential Equations 4
   - or EN.553.387 Scientific Computing: Linear Algebra 4
   - or EN.553.388 Scientific Computing: Differential Equations in Vector Spaces 4
   - or EN.553.391 Dynamical Systems 4

3. **Computing Emphasizing Numerical/Scientific Computing**
   - Choose one of the following (or one of the courses approved to meet the the Master’s/PhD Computing Requirement):
     - AS.250.205 Introduction to Computing 3-4
     - or EN.500.200 Computing for Engineers and Scientists
     - or EN.510.202 Computation and Programming for Materials Scientists and Engineers
     - or EN.530.371 Quantitative Applications in Mechanical Engineering
     - or EN.540.305 Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers
     - or EN.553.281 Introduction to Mathematical Programming
     - or EN.553.383 Scientific Computing with Python
     - or EN.553.385 Scientific Computing: Linear Algebra
     - or EN.553.386 Scientific Computing: Differential Equations
     - or EN.553.388 Scientific Computing: Differential Equations in Vector Spaces
     - or EN.553.400 Mathematical Modeling and Consulting
     - or EN.553.413 Applied Statistics and Data Analysis
     - or EN.553.433 Monte Carlo Methods
     - or EN.553.436 Data Mining
     - or EN.553.443 Financial Computing in C++
     - or EN.553.450 Computational Molecular Medicine
     - or EN.553.487 Numerical Methods for Financial Mathematics
     - or EN.553.488 Financial Computing I
     - or EN.553.493 Mathematical Image Analysis
     - or EN.560.220 Civil Engineering Programming
     - or EN.570.210 Computation/Math Modeling
     - or EN.580.200 Introduction to Scientific Computing in BME using Python, Matlab, and R
     - or EN.580.223 Models and Simulations
     - or EN.601.475 Machine Learning
     - or EN.601.482 Machine Learning: Deep Learning

4. **Discrete Mathematics**
   - Choose one of the following:
     - EN.553.171 Discrete Mathematics 4
     - or EN.553.172 Honors Discrete Mathematics
     - or EN.553.371 Cryptology and Coding
     - or EN.553.471 Combinatorial Analysis
     - or EN.553.472 Graph Theory

5. **Probability and Statistics**
   - EN.553.420 Introduction to Probability 4
   - EN.553.430 Introduction to Statistics 4

6. **Optimization**
   - EN.553.361 Introduction to Optimization 4

7. **Completion of an area of Focus, chosen from the list below.**
   - Two additional courses are to be taken in the area of focus, distinct from those used to satisfy requirements 5 and 6.
8. Courses coded Quantitative Studies totaling 40 credits of which at least 18 credits must be in courses numbered 300 or higher. (Courses used to meet the requirements above may be counted toward this total.)

9. For the B.S. degree, at least 12 credits coded Natural Sciences

Laboratory courses that accompany Natural Science courses may be used in reaching this total. (Courses used to meet the requirements above may be counted toward this total.)

Area of Focus
Two additional courses are to be taken in the area of focus.

Probability and Stochastic Processes
Choose two of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>AS.110.405</td>
<td>Real Analysis I</td>
</tr>
<tr>
<td>EN.553.426</td>
<td>Introduction to Stochastic Processes</td>
</tr>
<tr>
<td>EN.553.427</td>
<td>Stochastic Processes and Applications to Finance</td>
</tr>
<tr>
<td>EN.553.433</td>
<td>Monte Carlo Methods</td>
</tr>
<tr>
<td>EN.553.492</td>
<td>Mathematical Biology</td>
</tr>
</tbody>
</table>

Statistics and Statistical Learning
Choose two of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EN.553.400</td>
<td>Mathematical Modeling and Consulting</td>
</tr>
<tr>
<td>EN.553.413</td>
<td>Applied Statistics and Data Analysis</td>
</tr>
<tr>
<td>EN.553.414</td>
<td>Applied Statistics and Data Analysis II</td>
</tr>
<tr>
<td>EN.553.416</td>
<td>Introduction to Statistical Learning, Data Analysis and Signal Processing</td>
</tr>
<tr>
<td>EN.553.417</td>
<td>Mathematical Modeling: Statistical Learning</td>
</tr>
<tr>
<td>EN.553.433</td>
<td>Monte Carlo Methods</td>
</tr>
<tr>
<td>EN.553.436</td>
<td>Data Mining</td>
</tr>
<tr>
<td>EN.553.439</td>
<td>Time Series Analysis</td>
</tr>
<tr>
<td>EN.553.450</td>
<td>Computational Molecular Medicine</td>
</tr>
</tbody>
</table>

Optimization and Operations Research
Choose two of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>EN.553.362</td>
<td>Introduction to Optimization II</td>
</tr>
<tr>
<td>EN.553.400</td>
<td>Mathematical Modeling and Consulting</td>
</tr>
<tr>
<td>EN.553.453</td>
<td>Mathematical Game Theory</td>
</tr>
<tr>
<td>EN.553.463</td>
<td>Network Models in Operations Research</td>
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<tr>
<td>EN.553.465</td>
<td>Introduction to Convexity</td>
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</table>

Discrete Mathematics
Choose two of the following:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>AS.110.401</td>
<td>Introduction to Abstract Algebra</td>
</tr>
<tr>
<td>EN.553.371</td>
<td>Cryptology and Coding</td>
</tr>
<tr>
<td>EN.553.463</td>
<td>Network Models in Operations Research</td>
</tr>
<tr>
<td>EN.553.471</td>
<td>Combinatorial Analysis</td>
</tr>
<tr>
<td>EN.553.472</td>
<td>Graph Theory</td>
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</tbody>
</table>

Financial Mathematics
Choose two of the following:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>EN.553.427</td>
<td>Stochastic Processes and Applications to Finance</td>
</tr>
<tr>
<td>EN.553.441</td>
<td>Equity Markets and Quantitative Trading</td>
</tr>
<tr>
<td>EN.553.442</td>
<td>Investment Science</td>
</tr>
<tr>
<td>EN.553.444</td>
<td>Introduction to Financial Derivatives</td>
</tr>
<tr>
<td>EN.553.445</td>
<td>Interest Rate and Credit Derivatives</td>
</tr>
<tr>
<td>EN.553.447</td>
<td>Quantitative Portfolio Theory and Performance Analysis</td>
</tr>
</tbody>
</table>

Scientific Computing *
Choose two of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.383</td>
<td>Scientific Computing: Python</td>
</tr>
<tr>
<td>EN.553.385</td>
<td>Scientific Computing: Linear Algebra</td>
</tr>
<tr>
<td>EN.553.386</td>
<td>Scientific Computing: Differential Equations</td>
</tr>
<tr>
<td>EN.553.388</td>
<td>Scientific Computing: Differential Equations in Vector Spaces</td>
</tr>
<tr>
<td>EN.553.433</td>
<td>Monte Carlo Methods</td>
</tr>
</tbody>
</table>

* Neither the pair of EN.553.385-EN.553.386 nor EN.553.386-EN.553.388 allowed in fulfillment of the area of focus.

Requirements 1–9 together constitute a minimal core program, allowing maximum flexibility in planning degree programs. Students often are able to complete a second major during a four-year program or to proceed to the department’s combined bachelor’s/master’s degree program.

It is highly recommended that students develop a coherent program of study (see below) or at least take additional departmental courses, in order to establish a broad foundation for a career as an applied mathematician. Of particular importance are additional courses in optimization (EN.553.362 Introduction to Optimization II), stochastic processes (EN.553.426 Introduction to Stochastic Processes), statistics (EN.553.413 Applied Statistics and Data Analysis), dynamical systems (EN.553.391 Dynamical Systems), mathematical modeling and consulting (EN.553.400 Mathematical Modeling and Consulting), scientific computing (EN.553.385 Scientific Computing: Linear Algebra, EN.553.386 Scientific Computing: Differential Equations), and investment science (EN.553.442 Investment Science). Students planning to continue to graduate school in an applied mathematics program are encouraged to consider taking one or more graduate-level courses in probability (EN.553.720 Probability Theory I, EN.553.721 Probability Theory II), statistics (EN.553.730 Statistical Theory, EN.553.731 Statistical Theory II), optimization (EN.553.761 Nonlinear Optimization I, EN.553.762 Nonlinear Optimization II), combinatorics (EN.553.671 Combinatorial Analysis), numerical analysis (EN.553.781 Numerical Analysis), or matrix analysis (EN.553.792 Matrix Analysis and Linear Algebra).

Honors
The Department of Applied Mathematics and Statistics awards departmental honors based on a number of factors, including performance in coursework, research experiences, teaching, and service. If a student completes a senior thesis (EN.553.501 Senior Thesis) and also earns a GPA of 3.5 or higher in Applied Mathematics and Statistics courses, then the student will automatically be awarded departmental honors.

Minor in Applied Mathematics and Statistics
The minor in applied mathematics and statistics should be attractive to students majoring in a variety of disciplines, in both the School of Engineering and the School of Arts and Sciences. The minor provides formal recognition of the depth and strength of a student’s quantitative knowledge beyond the minimal requirements of his/her major.

The requirements of the minor in applied mathematics and statistics are the following:

- Completion of an approved program of study containing at least 18 credits in courses coded Quantitative Studies. The first two courses in calculus (AS.110.106 Calculus I (Biology and Social
Students may not count all 3 courses, and statistics may obtain more information from the Applied Mathematics and Statistics Department office.

### Graduate Programs

A wide variety of advanced courses, seminars, and research opportunities is available in the Department of Applied Mathematics and Statistics. In addition to graduate programs in probability, statistics, operations research, optimization, discrete mathematics, scientific computation, and financial mathematics, advanced study is possible in interdisciplinary topics in cooperation with other departments, particularly the departments of Biostatistics, Computer Science, Economics, Environmental Health and Engineering, Health Services Administration, Mathematics, and Sociology. A graduate student in the Department of Applied Mathematics and Statistics may thus develop a program that suits his/her individual interests and objectives.

Various elements of the graduate program are summarized below. Further information is available from the department office.

### Admission

To be admitted to an advanced degree program in the department, an applicant must show that he/she has the basic intellectual capacity and has acquired the skills necessary to complete the program successfully within a reasonable period of time. A faculty committee evaluates each applicant's credentials; there are no rigid requirements.

Prospective applicants should submit transcripts of previous academic work, letters of recommendation from persons qualified to evaluate the applicant's academic performance and potential for graduate study, a statement of purpose describing anticipated professional goals, and Graduate Record Examination (GRE) scores. Foreign students must submit scores from the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS).

Most applicants have undergraduate majors in quantitative fields such as mathematics, statistics, engineering, or a field in the physical sciences, but any major is permitted. Regardless of the major, completion of a program in undergraduate mathematics at least through advanced calculus and linear algebra is essential to begin the normal graduate program.

### Requirements for the Master's Degree in Applied Mathematics and Statistics

Students may elect to work toward either the master of arts (M.A.) degree or the master of science in engineering (M.S.E.) degree in applied mathematics and statistics. All master's degrees in applied mathematics and statistics ordinarily require a minimum of two semesters of registration as a full-time resident graduate student.

To obtain departmental certification for the master's degree in Applied Mathematics and Statistics, the student must:

1. Complete satisfactorily at least eight one-semester courses of graduate work in a coherent program approved by the faculty advisor. All 600-level and 700-level courses (with the exception of seminar and research courses), are satisfactory for this requirement. Certain courses in other departments are also acceptable, and must be approved in advance. At most 3 courses outside the department may be counted toward the Master's degree requirements. WSE courses listed as 1- or 2-credit courses count only as one-half course. Approved KSAS graduate courses count as one-half course if the number of meeting hours per week is 1 or 2 and count as a full course otherwise.

2. Meet either of the following options:

### All courses used to meet AMS departmental minor requirements must be taken for a letter grade and passed with grade of C- or higher.

### Students may not count all 3 courses, EN.553.310 Probability & Statistics/EN.553.311 Probability and Statistics for the Biological Sciences and Engineering, EN.553.420 Introduction to Probability, and EN.553.430 Introduction to Statistics toward minor requirements.

### A student wishing to complete a minor in applied mathematics and statistics may obtain more information from the Applied Mathematics and Statistics Department office.
• (a) submit an acceptable research report based on an approved project; or  
• (b) complete satisfactorily two additional one-semester graduate courses, as approved by the faculty advisor.

3. Satisfy the computing requirement by receiving a grade of B- or better in one of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.600</td>
<td>Mathematical Modeling and Consulting</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.613</td>
<td>Applied Statistics and Data Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.633</td>
<td>Monte Carlo Methods</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.636</td>
<td>Data Mining</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.650</td>
<td>Computational Molecular Medicine</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.688</td>
<td>Financial Computing I</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.693</td>
<td>Mathematical Image Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.732</td>
<td>Bayesian Statistics</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.743</td>
<td>Graphical Models</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.753</td>
<td>Commodities and Commodity Markets</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.761</td>
<td>Nonlinear Optimization I</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.762</td>
<td>Nonlinear Optimization II</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.763</td>
<td>Stochastic Search &amp; Optimization</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.765</td>
<td>Convex Optimization</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.780</td>
<td>Shape and Differential Geometry</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.675</td>
<td>Machine Learning</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.682</td>
<td>Machine Learning: Deep Learning</td>
<td>3</td>
</tr>
</tbody>
</table>

4. Complete an area of focus by taking three courses in one of the following areas. A list of courses that can be counted toward each area of focus will be maintained and updated every year. Some courses from other departments can be eligible to count toward area of focus. They can be used within the three-course limit specified in point 1, above. This list of courses is based on recent offerings. Not all classes are available every year and substitute classes may be accepted if approved by the advisor and the Academic Affairs Committee.

**Probability Theory**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.626</td>
<td>Introduction to Stochastic Processes</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.627</td>
<td>Stochastic Processes and Applications to Finance</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.628</td>
<td>Stochastic Processes and Applications to Finance II</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.633</td>
<td>Monte Carlo Methods</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.720</td>
<td>Probability Theory I</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.721</td>
<td>Probability Theory II</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.722</td>
<td>Introduction to Stochastic Calculus</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.763</td>
<td>Stochastic Search &amp; Optimization</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.764</td>
<td>Modeling, Simulation, and Monte Carlo</td>
<td>3</td>
</tr>
</tbody>
</table>

**Statistics and Statistical Learning**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.613</td>
<td>Applied Statistics and Data Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.614</td>
<td>Applied Statistics and Data Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.636</td>
<td>Data Mining</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.639</td>
<td>Time Series Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.650</td>
<td>Computational Molecular Medicine</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.730</td>
<td>Statistical Theory</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.731</td>
<td>Statistical Theory II</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.732</td>
<td>Bayesian Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

5. Complete training on the responsible and ethical conduct of research, if applicable. Please see WSE Policy on the Responsible Conduct of Research.

6. Complete training on academic ethics.
An overall GPA of 3.0 must be maintained in courses used to meet the program requirements. At most two course grades of C or C+ are allowed to be used and the rest of the course grades must be B- or better.

Each candidate for the master’s degree must submit to the department for approval a written program stating how they plan to meet their degree requirements. This should be done early in the first semester of residence.

Doctoral students in other departments may concurrently undertake a master’s program in Applied Mathematics and Statistics with the permission of the AMS department through an application review. Application information is available in the department office.

**Requirements for the Master’s Degree in Financial Mathematics**

The department offers an M.S.E. degree in Financial Mathematics. The structure of this program is summarized below. More detailed information about this program may be found on the department’s website.

Full-time students in this program are expected to attend courses for three semesters beginning in the fall semester, a summer internship after the spring semester of their first year, and return for a second fall semester.

For departmental certification for this degree, the student must complete the following courses or approved substitute courses with program approval pursuing either the Legacy Track or Area of Focus Track:

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**Area of Focus Track**

Core financial mathematics requirements (2 courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.644</td>
<td>Introduction to Financial Derivatives</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.645</td>
<td>Interest Rate and Credit Derivatives</td>
<td>4</td>
</tr>
</tbody>
</table>

Core applied mathematics requirements (3 courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.613</td>
<td>Applied Statistics and Data Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.627</td>
<td>Stochastic Processes and Applications to Finance</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.639</td>
<td>Time Series Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives *

7 elective courses:

- One in Applied Mathematics and Statistics | 4
- Two courses in Financial Mathematics  | 4
- Four additional courses from the approved electives listing or with prior program approval | 4

Financial Mathematics Masters Seminar

- Communication skills requirement (includes the Communication Skills Practicum)

**Summer Internship**

For courses used toward the degree, all grades must be C or higher, at most two grades can be below a B-, and the overall average grade point average in these courses must be at least 3.0.

* Please see department website for approved electives.

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**Requirements for the Bachelor’s/Master’s Program**

Highly motivated and exceptionally well-qualified undergraduates may apply for admission to the combined bachelor’s/master’s program in applied mathematics and statistics. Interested students should apply no later than fall semester of their senior year.

The requirements for this program consist of those for the bachelor’s and master’s programs.

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**Requirements for the Ph.D. Degree**

The objective of the department’s Ph.D. program is to produce graduates who are broadly educated in applied mathematics and statistics and who can work at the current frontiers of their chosen specialized disciplines. The introductory phase of graduate study acquaints the student with a spectrum of topics, provides an opportunity to fill gaps in his or her background, and affords a close view of the doctoral research process and of potential research areas and advisors. Continuation to advanced study and dissertation research is based upon favorable evaluation of preparedness and potential. The progress of students is evaluated at the end of every semester. The culmination of the program is the doctoral dissertation, representing an original and significant contribution to knowledge in applied mathematics.

In addition to fulfilling the university requirement of a minimum of two consecutive semesters of registration as a full-time resident graduate student, the student must accomplish the following to obtain departmental certification for the Ph.D.:

- Pass the Introductory Examination, normally offered immediately before each semester.
- Pass the Ph.D. Candidacy Examination. This oral examination is normally taken in the third year of residency. The scope of the exam will be governed by a syllabus prepared by the student with the help of the student’s mentor or advisor.
- Pass the Graduate Board Oral Examination, normally taken in the third year of residence.
- Acquire teaching experience under the supervision of the faculty.
- Complete at least 12 one-semester courses of graduate work in a coherent program approved by the faculty advisor.
• Demonstrate a working knowledge of the utilization of computers in applied mathematics and statistics.
• Complete a program of original research and its clear exposition in a written dissertation. The dissertation must be approved by at least two faculty readers and be certified by them to be a significant contribution to knowledge and worthy of publication in scholarly journals. The candidate defends the dissertation in a public examination held under the auspices of the department.

Additional details on these items may be found on the department's website.

Course Program
The most common way for students to gain the knowledge and skills to succeed in the Ph.D. program is through course work. In consultation with his or her advisor, each student will develop a program of proposed course work. The relevant courses for the Ph.D. are of three types: basic graduate-level courses, additional specialized courses appropriate to the student's field of research, and an elective one year course selected to broaden the student in applied mathematics. To promote a well-rounded student's field of research, and an elective one year course selected to graduate-level courses, additional specialized courses appropriate to the course work. The relevant courses for the Ph.D. are of three types: basic graduate-level courses, additional specialized courses appropriate to the student's field of research, and an elective one year course selected to broaden the student in applied mathematics. To promote a well-rounded education and record, all full-time graduate students are expected to enroll in an appropriate number of courses for their stage in the program. Students are required to enroll in and attend EN.553.801 Department Seminar, the Applied Mathematics and Statistics Department Seminar, every semester. Grades of B- or better (or equivalent level of performance in pass/fail courses) are expected of all department Ph.D. graduate students in their course work.

Basic Courses
All students are encouraged to master basic material in:

• probability (EN.553.720), statistics (EN.553.730), and stochastic processes (EN.553.626);
• optimization (EN.553.761);
• numerical and matrix analysis (EN.553.781, EN.553.792); and
• discrete mathematics (EN.553.671, EN.553.672).

Normally, a student will have completed at least eight basic courses by the end of the fourth semester of residence.

Specialized Courses
Each student takes advanced courses appropriate to the proposed area of dissertation research, with the approval of the research advisor.

Elective Courses
Students are encouraged to take additional elective course work, either covering one area in depth or covering two areas. Typical areas in other departments are biology, econometrics, mathematical economics, mathematical ecology, computational geometry, systems theory, health systems, mathematics, faculty location, psychometrics, and physics. These courses may complement or supplement the student's previous experience, but if a student has no previous experience in an area some elementary course work may be necessary as a prerequisite to acceptable graduate level courses.

Financial Assistance
A limited number of teaching and research assistantships providing full tuition and a competitive academic year stipend are available to qualified full-time Ph.D. candidates. Furthermore, the following special fellowships are awarded:

• The Rufus P. Isaacs Fellowship, named in honor of a late member of the faculty acclaimed for his contributions to operations research.
• The Charles and Catherine Counselman Fellowship, generously endowed by Hopkins alumnus Charles Counselman.

In addition, summer employment opportunities are often available within the university and in the Baltimore-Washington corridor.

Faculty
Chair
E. Laurent Younes
Professor: mathematical imaging, shape theory and applied differential geometry, computational probability, statistics.

Vice Dean for Graduate Education
Edward R. Scheinerman
Professor: discrete mathematics, graph theory, social networks, random methods, partially ordered sets.

Director of Graduate Studies
Daniel Q. Naiman
Professor, Director of Financial Mathematics Master’s Program: statistics, computational probability, bioinformatics.

Director of Undergraduate Studies
Donniell E. Fishkind
Associate Research Professor: combinatorics, graph theory, matrix analysis.

Associate Director of Undergraduate Studies
James A. Fill
Professor: probability, stochastic processes, random structures, and algorithms.

Executive Director of Financial Mathematics Master’s Program
David Audley
Senior Lecturer: financial mathematics, term structure models, fixed income derivatives, and quantitative portfolio strategies.

Professors
William J. Cook
Professor: combinatorial optimization, integer programming, operations research, large-scale computing.

Gregory L. Eyink
Professor: mathematical physics, fluid mechanics, turbulence, dynamical systems, partial differential equations, nonequilibrium statistical physics, geophysics and climate.

Donald Geman
Professor: image analysis, statistical learning, bioinformatics.

Yannis Kevrekidis
Bloomberg Distinguished Professor: algorithms, data, and the computer-assisted modeling of complex dynamical systems.

Sunil Kumar
Professor, Provost and Sr Vice President for Academic Affairs: optimizing manufacturing systems, service operations, and communications networks; and on applying optimization methods and control theory to various managerial problems.

Mauro Maggioni
Bloomberg Distinguished Professor: analysis, partial differential equations, algebraic topology, big data, data intensive computation, harmonic analysis over manifolds and over discrete structures.
Carey E. Priebe
Professor: statistics, image analysis, pattern recognition.

John C. Wierman
Professor: probability, statistics, discrete mathematics, percolation theory, stochastic processes.

**Associate Professors**
Amitabh Basu
Associate Professor: optimization, discrete and combinatorial geometry, convex analysis, operations research.

Tamas Budavari
Associate Professor: computational statistics, Bayesian inference, low-dimensional embeddings, streaming algorithms, parallel processing on GPUs, scientific databases, survey astronomy.

**Assistant Professors**
Maxim Bichuch
Assistant Professor: financial mathematics, utility optimization, market with transaction costs, counterparty risk, valuation adjustments

Nicolas Charon
Assistant Professor: shape analysis, image analysis, Riemannian and discrete geometry.

Edinah Gnang
Assistant Professor: discrete mathematics, graph theory, multilinear algebra, image analysis, experimental math.

Daniel P. Robinson
Assistant Professor: optimization, numerical analysis, matrix analysis, complementarity problems.

Yanxun Xu
Assistant Professor: Bayesian statistics, cancer genomics, clinical trial design, graphical model, nonparametric Bayesian, statistical inference for big data analysis, high-throughput genomic data and proteomics data.

**Research Professor**
Helyette Geman
Research Professor: financial mathematics, commodities.

James C. Spall

**Associate Research Professor**
Minh Hai Tang
Associate Research Professor: statistical pattern recognition, high-dimensional data analysis.

**Assistant Research Professor**
Avanti Athreya
Assistant Research Professor: probability, stochastic processes.

Mengyang Gu
Assistant Research Professor: Bayesian analysis, uncertainty quantification, computer model emulation and calibration, spatial statistics, time series, robust analysis, graphical models.

**Senior Lecturer**
Beryl Castello
Senior Lecturer: operations research, optimization, facility location, inventory modeling.

Mario Micheli
Senior Lecturer: image processing, shape analysis, variational methods, and applied statistics.

John Miller
Senior Lecturer: financial mathematics, equity derivative trading and risk management, number theory.

Fred Torcaso
Senior Lecturer: stochastic processes, asymptotics, and partial differential equations.

**Associate Research Scientist**
Antwan D. Clark
Associate Research Scientist: high performance computing and resiliency analysis.

**Assistant Research Scientist**
Devrim Kaba
Assistant Research Scientist: statistics, dynamical systems, and optimization for security assessment in power systems.

**Joint and Secondary Appointments**
Gregory Chirikjian
Professor: Mechanical Engineering, computational structural biology, applied mathematics, robotics.

John Goutsias
Professor: Electrical and Computer Engineering.

Benjamin F. Hobbs
Professor: Environmental Health and Engineering, energy and environmental systems and economics.

Pablo Iglesias
Professor: Electrical and Computer Engineering.

Takeru Igusa
Professor: Civil Engineering.

S. Rao Kosaraju
Edward J. Schaefer Professor: Computer Science, design of algorithms, parallel computation, pattern matching, robotics computational geometry.

Fei Lu
Assistant Professor: Mathematics.

Enrique Mallada
Assistant Professor: Electrical and Computer Engineering.

Michael I. Miller
Professor: Biomedical Engineering.

Jerry L. Prince
Professor: Electrical and Computer Engineering, multi-dimensional signal processing, medical imaging, computational geometry.

Suchi Saria
Assistant Professor: Computer Science.

Sauleh Siddiqui
Assistant Professor: Civil Engineering.

Joshua Vogelstein
Assistant Professor: Center for Imaging Science.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

EN.553.100. Introduction to Applied Mathematics and Statistics. 1.0 Credit.
A seminar-style series of lectures and assignments to acquaint the student with a range of intellectual and professional activities performed by applied mathematicians and statisticians. Problems arising in applied mathematics and statistics are presented by department faculty and outside speakers. Recommended Course Background: one semester of Calculus.
Instructor(s): M. Bichuch
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.105. Mathematics of Music. 3.0 Credits.
This course aims to promote students’ understanding of some important mathematical concepts by focusing on music and the sounds made by musical instruments as an area of mathematical application. Students will be exposed to basic concepts in mathematics including Fourier series, linear algebra, fundamental ideas from signal processing, and stochastic process models. The structure, organization, and synthesis of sounds and combinations of sounds will be explored.
Instructor(s): D. Naiman
Area: Quantitative and Mathematical Sciences.

EN.553.111. Statistical Analysis I. 4.0 Credits.
First semester of a general survey of statistical methodology. Topics include descriptive statistics, introductory probability, conditional probability, random variables, expectation, sampling, the central limit theorem, classical and robust estimation, confidence intervals, and hypothesis testing. Case studies from psychology, epidemiology, economics and other fields serve to illustrate the underlying theory. Some use of Minitab, Excel or R, but no prior computing experience is necessary. Recommended Course Background: four years of high school mathematics. Students who may wish to undertake more than two semesters of probability and statistics should consider EN.553.420-430 or EN.553.472 or EN.553.671 or EN.553.672.
Prerequisites: Statistics Sequence restriction: students who have completed AS.230.205 may not enroll.;Statistics Sequence restriction: students who have completed any of these courses may not register: EN.553.211 OR EN.553.230 OR EN.553.310 OR EN.553.311 OR EN.553.420 OR EN.553.430 OR EN.553.413 OR EN.560.435 OR AS.280.345 OR AS.280.314 OR AS.200.315 OR AS.200.315 OR AS.560.348
Instructor(s): D. Athreya
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.112. Statistical Analysis II. 4.0 Credits.
Second semester of a general survey of statistical methodology. Topics include two-sample hypothesis tests, analysis of variance, linear regression, correlation, analysis of categorical data, and nonparametrics. Students who may wish to undertake more than two semesters of probability and statistics should strongly consider the EN.553.420-430 sequence.
Prerequisites: EN.553.111 OR AS.230.205 OR AS.280.345 OR credit for AP Statistics
Instructor(s): F. Torcaso
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.171. Discrete Mathematics. 4.0 Credits.
Introduction to the mathematics of finite systems. Logic; Boolean algebra; induction and recursion; sets, functions, relations, equivalence, and partially ordered sets; elementary combinatorics; modular arithmetic and the Euclidean algorithm; group theory; permutations and symmetry groups; graph theory. Selected applications. The concept of a proof and development of the ability to recognize and construct proofs are part of the course. Recommended Course Background: Four years of high school mathematics.
Prerequisites: Students may not earn credit for EN.553.171 and EN.553.172.;EN.553.171 may not be taken after EN.553.471 or EN.553.472 or EN.553.671 or EN.553.672.
Corequisites: EN.553.171 may not be taken concurrently with EN.553.471 or EN.553.472 or EN.553.671 or EN.553.672.
Instructor(s): F. Torcaso
Area: Quantitative and Mathematical Sciences.

EN.553.172. Honors Discrete Mathematics. 4.0 Credits.
Introduction to the mathematics of finite systems. Logic; Boolean algebra; induction and recursion; sets, functions, relations, equivalence, and partially ordered sets; elementary combinatorics; modular arithmetic and the Euclidean algorithm; polynomials rings, group theory; permutations groups and Galois theory; graph theory. Selected applications. The concept of a proof and development of the ability to recognize and construct proofs are part of the course. Recommended Course Background: Four years of high school mathematics.
Prerequisites: Students may not earn credit for both EN.553.171 and EN.553.172.;EN.553.172 may not be taken after EN.553.471 OR EN.553.472 OR EN.553.671 OR EN.553.672
Instructor(s): E. Gnang
Area: Quantitative and Mathematical Sciences.

EN.553.211. Probability and Statistics for the Life Sciences. 4.0 Credits.
This is an introduction to statistics aimed at students in the life sciences. The course will provide the necessary background in probability with treatment of independence, Bayes theorem, discrete and continuous random variables and their distributions. The statistical topics covered will include sampling and sampling distributions, confidence intervals and hypothesis testing for means, comparison of populations, analysis of variance, linear regression and correlation. Analysis of data will be done using Excel.
Prerequisites: AS.110.106 OR AS.110.108 OR AS.110.113;Statistics Sequence restriction: Students who have completed any of these courses may not register: EN.550.230 OR AS.280.345 OR AS.280.314 OR AS.200.315 OR EN.550.310 OR EN.550.311 OR EN.560.435 OR EN.550.420 OR EN.550.430 OR EN.550.430
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.
EN.553.230. Introduction to Biostatistics. 4.0 Credits.
A self-contained course covering various data analysis methods used in the life sciences. Topics include types of experimental data, numerical and graphical descriptive statistics, concepts of (and distinctions between) population and sample, basic probability, fitting curves to experimental data (regression analysis), comparing groups in populations (analysis of variance), methods of modeling probability (contingency tables and logistic regression). Prerequisite: 3 years of high school mathematics
Prerequisites: Statistics Sequence restriction: Students who have completed any of these courses may not register: EN.550.211 OR AS.280.345 OR AS.200.314 OR AS.200.315 OR EN.550.310 OR EN.550.311 OR EN.560.435 OR EN.550.420 OR EN.550.430 OR EN.560.348
Instructor(s): F. Torcaso
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.281. Introduction to Mathematical Programming. 4.0 Credits.
This course introduces a variety of techniques for solving optimization problems in engineering and science on a computer using MATLAB. Topics include the programming language MATLAB, as well as optimization theory, algorithms, and applications. MATLAB optimization tools will also be explored. Algorithms to be covered will include gradient descent, Newton's method, and the simplex method. Applications will include constrained least squares regression, neural networks, and k-means clustering.
Prerequisites: (AS.110.106 OR AS.110.108) AND (AS.110.107 OR AS.110.109 OR AS.110.113)
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.291. Linear Algebra and Differential Equations. 4.0 Credits.
An introduction to the basic concepts of linear algebra, matrix theory, and differential equations that are used widely in modern engineering and science. Intended for engineering and science majors whose program does not permit taking both AS.110.201 and AS.110.302.
Prerequisites: AS.110.107 OR AS.110.109 OR AS.110.113
Instructor(s): M. Micheli
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.310. Probability & Statistics. 4.0 Credits.
An introduction to probability and statistics at the calculus level, intended for engineering and science students planning to take only one course on the topics. Combinatorial probability, independence, conditional probability, random variables, expectation and moments, limit theory, estimation, confidence intervals, hypothesis testing, tests of means and variances, and goodness-of-fit will be covered. Recommended co-requisite: multivariable calculus.
Prerequisites: (AS.110.106 OR AS.110.108) AND (AS.110.107 OR AS.110.109 OR AS.110.113)
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.311. Probability and Statistics for the Biological Sciences and Engineering. 4.0 Credits.
An introduction to probability and statistics at the calculus level, intended for students in the biological sciences planning to take only one course on the topics. Combinatorial probability, independence, conditional probability, random variables, expectation and moments, limit theory, estimation, confidence intervals, hypothesis testing, tests of means and variances, and goodness-of-fit will be covered. Recommended Course Corequisite: AS.110.202
Prerequisites: (AS.110.106 OR AS.110.108) AND (AS.110.107 OR AS.110.109) AND AS.110.113
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.361. Introduction to Optimization. 4.0 Credits.
An introductory survey of optimization methods, supporting mathematical theory and concepts, and application to problems of planning, design, prediction, estimation, and control in engineering, management, and science. Study of varied optimization techniques including linear programming, network-problem methods, dynamic programming, integer programming, and nonlinear programming. Students should be familiar with computing and linear algebra. Recommended Course Background: one year of calculus
Prerequisites: (AS.110.107 OR AS.110.109 OR AS.110.113) AND (EN.553.291 OR AS.110.201 OR AS.110.212)
Instructor(s): D. Fishkind
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.362. Introduction to Optimization II. 4.0 Credits.
An introductory survey of optimization methods, supporting mathematical theory and concepts, and application to problems of planning, design, prediction, estimation, and control in engineering, management, and science. Study of varied optimization techniques including linear programming, network-problem methods, dynamic programming, integer programming, and nonlinear programming. Appropriate for undergraduate students and graduate students without the mathematical background required for EN.553.761.
Prerequisites: EN.550.361 AND (AS.110.202 OR AS.110.211)
Instructor(s): D. Fishkind
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.371. Cryptology and Coding. 4.0 Credits.
Computing experience. A first course in the mathematical theory of secure and reliable electronic communication. Cryptology is the study of secure communication: How can we ensure the privacy of messages? Coding theory studies how to make communication reliable: How can messages be sent over noisy lines? Topics include finite field arithmetic, error-detecting and error-correcting codes, data compressions, ciphers, one-time pads, the Enigma machine, one-way functions, discrete logarithm, primality testing, secret key exchange, public key cryptosystems, digital signatures, and key escrow.
Prerequisites: EN.550.171 AND (EN.550.291 OR AS.110.201 OR AS.110.212)
Instructor(s): D. Fishkind
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.383. Scientific Computing with Python. 4.0 Credits.
In this course, we will study numerical methods, and scientific computing using the Python language. We will discuss topics in numerical analysis, such as equation solving, differential equations, interpolation, integration etc. We will also introduce image analysis techniques such as filtering, denoising, inpainting, and segmentation. We will discuss core computer language concepts, algorithms, and data-structures using Python. No previous experience with computer programming is needed.
Prerequisites: (EN.550.291 OR AS.110.201 OR AS.110.212) AND (AS.110.202 OR AS.110.211)
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

EN.553.385. Scientific Computing: Linear Algebra. 4.0 Credits.
A first course on computational linear algebra and applications. Topics include floating-point arithmetic, algorithms and convergence, Gaussian elimination for linear systems, matrix decompositions (LU, Cholesky, QR), iterative methods for systems (Jacobi, Gauss–Seidel), and approximation of eigenvalues (power method, QR-algorithm). Theoretical topics such as vector spaces, inner products, norms, linear operators, matrix norms, eigenvalues, and canonical forms of matrices (Jordan, Schur) are reviewed as needed. Matlab is used to solve all numerical exercises; no previous experience with computer programming is required.
Prerequisites: (EN.553.291 OR AS.110.201 OR AS.110.212) AND (AS.110.202 OR AS.110.211)
Instructor(s): G. Eyink
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.386. Scientific Computing: Differential Equations. 4.0 Credits.
A first course on computational differential equations and applications. Topics include floating-point arithmetic, algorithms and convergence, root-finding (midpoint, Newton, and secant methods), numerical differentiation and integration, and numerical solution of initial value problems (Runge–Kutta, multistep, extrapolation methods, stability, implicit methods, and stiffness). Theoretical topics such as existence, uniqueness, and stability of solutions to initial-value problems, conversion of higher order/ non-autonomous equations to systems, etc., will be covered as needed. Matlab is used to solve all numerical exercises; no previous experience with computer programming is required.
Prerequisites: (AS.110.202 OR AS.110.211) AND (EN.550.291 OR AS.110.302 OR AS.110.306).
Instructor(s): G. Eyink
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.388. Scientific Computing: Differential Equations in Vector Spaces. 4.0 Credits.
A first course on computational differential equations in vector spaces and applications, a continuation of EN.553.385. Topics include root-finding for nonlinear systems of equations (bisection, Newton, and secant methods), numerical differentiation and integration, and numerical solution of initial-value problems (Runge–Kutta, multistep, extrapolation methods, stability, implicit methods, and stiffness) and boundary-value problems (shooting method, relaxation) for ordinary differential equations in finite-dimensional vector spaces. Theoretical topics such as existence, uniqueness, and stability of solutions to initial-value problems, conversion of higher-order/non-autonomous equations to systems, etc., will be covered as needed. Matlab is used to solve all numerical exercises.
Prerequisites: Prereqs: EN.550.385 AND (EN.550.291 OR AS.110.302 OR AS.110.306)
Instructor(s): G. Eyink
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.391. Dynamical Systems. 4.0 Credits.
Mathematical concepts and methods for describing and analyzing linear and nonlinear systems that evolve over time. Topics include boundedness, stability of fixed points and attractors, feedback, optimality, Liapounov functions, bifurcation, chaos, and catastrophes. Examples drawn from population growth, economic behavior, physical and engineering systems. The main mathematical tools are linear algebra and basic differential equations.
Prerequisites: EN.553.291 OR AS.110.201 OR AS.110.211
Instructor(s): X. Ye
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.400. Mathematical Modeling and Consulting. 4.0 Credits.
Creating, analyzing and evaluating optimization and mathematical models using case studies. Project-oriented practice and guidance in modeling techniques, with emphasis on communication of methods and results. Applications may include transportation networks, scheduling, industrial processes, and telecommunications. Computation will be emphasized throughout using MATLAB.
Prerequisites: EN.553.361 OR EN.553.362; Students may receive credit for EN.550.400/EN.553.400 or EN.553.600, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.413. Applied Statistics and Data Analysis. 4.0 Credits.
An introduction to basic concepts, techniques, and major computer software packages in applied statistics and data analysis. Topics include numerical descriptive statistics, observations and variables, sampling distributions, statistical inference, linear regression, multiple regression, design of experiments, nonparametric methods, and sample surveys. Real-life data sets are used in lectures and computer assignments. Intensive use of statistical packages such as S+ to analyze data.
Prerequisites: EN.553.112 OR EN.553.310 OR EN.553.311 OR EN.553.420; Students may receive credit for EN.550.413/EN.553.413 or EN.553.613, but not both.
Instructor(s): M. Tang
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.414. Applied Statistics and Data Analysis II. 3.0 Credits.
Part II of a sequence on data analysis and linear models. Topics include categorical and discrete data analysis, mixed models, semiparametric and nonparametric regression, and generalized additive models. Applications of these methods using the R environment for statistical computing will be emphasized.
Prerequisites: EN.550.413; Students may receive credit for EN.550.414/EN.553.414 or EN.553.614, but not both.
Instructor(s): M. Tang
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.416. Introduction to Statistical Learning, Data Analysis and Signal Processing. 4.0 Credits.
Introduction to high dimensional data sets: key problems in statistical and machine learning. Geometric aspects. Principal component analysis, linear dimension reduction, random projections. Concentration phenomena: examples and basic inequalities. Metric spaces and embeddings thereof. Kernel methods. Nonlinear dimension reduction, manifold models. Regression. Vector spaces of functions, linear operators, projections. Orthonormal bases; Fourier and wavelet bases, and their use in signal processing and time series analysis. Basic approximation theory. Linear models, least squares. Bias and variance tradeoffs, regularization. Sparsity and compressed sensing. Multiscale methods. Graphs and networks. Random walks on graphs, diffusions, page rank. Block models. Spectral clustering, classification, semi-supervised learning. Algorithmic and computational aspects of the above will be consistently in focus, as will be computational experiments on synthetic and real data. Linear algebra will be used throughout the course, as will multivariable calculus and basic probability (discrete random variables). Basic experience in programming in C or MATLAB or R or Octave. Recommended Course Background: More than basic programming experience in Matlab or R; some more advanced probability (e.g. continuous random variables), some signal processing (e.g. Fourier transform, discrete and continuous). Co-listed with AS.110.446
Prerequisites: (AS.110.201 OR AS.110.212) AND (EN.550.310 OR EN.550.311 OR EN.550.420) AND (AS.110.202 OR AS.110.211)
Instructor(s): M. Maggioni
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.417. Mathematical Modeling: Statistical Learning. 3.0 Credits.
Students will work independently or in groups on two or more projects using and developing machine learning methods such as linear and generalized linear regression, shrinkage methods, Bayesian decision theory, variable selection, clustering, dimension reduction, functional data analysis, kernel smoothing methods and so on. These concepts will be briefly discussed in class, but some basic knowledge about them is expected. Some usual coding methods such as R, python, Matlab and C++ will also be discussed in class. Successful works could gradually turn into a part of an undergraduate or graduate thesis, or research papers. This course emphasizes on both mathematical reasons behind a model and computational skills to implement.
Prerequisites: EN.550.436 or EN.550.413 or EN.550.430 or EN.550.630 or EN.550.632
Instructor(s): M. Gu
Area: Quantitative and Mathematical Sciences.

EN.553.420. Introduction to Probability. 4.0 Credits.
Probability and its applications, at the calculus level. Emphasis on techniques of application and on rigorous mathematical demonstration. Probability, combinatorial probability, random variables, distribution functions, important probability distributions, independence, conditional probability, moments, covariance and correlation, limit theorems. Students initiating graduate work in probability or statistics should enroll in EN.553.620 or EN.553.720. Prerequisites: one year of calculus.
Corequisites: multivariable calculus and linear algebra
Prerequisites: AS.110.107 OR AS.110.109 OR AS.110.113; Students may receive credit for EN.550.420/EN.553.420 or EN.553.620, but not both.; AS.110.201 OR AS.110.202 OR AS.110.211 OR AS.110.212, can be taken concurrently.
Instructor(s): J. Wierman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.426. Introduction to Stochastic Processes. 4.0 Credits.
Mathematical theory of stochastic processes. Emphasis on deriving the dependence relations, statistical properties, and sample path behavior including random walks, Markov chains (both discrete and continuous time), Poisson processes, martingales, and Brownian motion. Applications that illuminate the theory. Students may receive credit for only one of EN.553.426, EN.553.427, EN.553.626, or EN.553.627.
Prerequisites: (EN.550.420 OR EN.553.620) AND (EN.550.291 OR AS.110.201 OR AS.110.212); Students may receive credit for EN.550.426/EN.553.426 or EN.553.626, but not both.
Instructor(s): J. Wierman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.427. Stochastic Processes and Applications to Finance. 4.0 Credits.
A development of stochastic processes with substantial emphasis on the processes, concepts, and methods useful in mathematical finance. Relevant concepts from probability theory, particularly conditional probability and conditional expectation, will be briefly reviewed. Important concepts in stochastic processes will be introduced in the simpler setting of discrete-time processes, including random walks, Markov chains, and discrete-time martingales, then used to motivate more advanced material. Most of the course will concentrate on continuous-time stochastic processes, particularly martingales, Brownian motion, diffusions, and basic tools of stochastic calculus. Examples will focus on applications in finance, economics, business, and actuarial science.
Prerequisites: EN.553.420 OR EN.553.620; Students may receive credit for only one of EN.553.427, EN.553.427, OR EN.553.627
Instructor(s): D. Athreya; M. Bichuch
Area: Quantitative and Mathematical Sciences.

EN.553.428. Stochastic Processes and Applications to Finance II. 4.0 Credits.
A basic knowledge of stochastic calculus and Brownian motion is assumed. Topics include stochastic differential equations, the Feynman-Kac formula and connections to partial differential equations, changes of measure, fundamental theorems of asset pricing, martingale representations, first passage times and pricing of path-dependent options, and jump processes.
Prerequisites: EN.553.427 OR EN.553.627; Students may receive credit for EN.550.428/EN.553.428 or EN.553.628, but not both.
Instructor(s): J. Miller
Area: Quantitative and Mathematical Sciences.

EN.553.429. Introduction to Research in Discrete Probability. 3.0 Credits.
Aspects of the research process, including reading and writing mathematics, LaTeX, literature search, problem identification, problem-solving, oral presentations, Beamer, conference attendance, publication of results, and research ethics. An initial research experience, individually and/or in groups, with students identifying and developing projects in discrete mathematics and probability, such as percolation, random graphs, random walks, birthday problems, gambler’s ruin, coupon collector problems, and self-avoiding walks. Instructor’s permission required. Open only to undergraduates.
Prerequisites: EN.553.171 AND (EN.553.420 OR EN.553.620); Students may receive credit for EN.550.429/EN.553.429 or EN.553.629, but not both.
Instructor(s): J. Wierman
Area: Quantitative and Mathematical Sciences.
EN.553.430. Introduction to Statistics. 4.0 Credits.
Introduction to the basic principles of statistical reasoning and data analysis. Emphasis on techniques of application. Classical parametric estimation, hypothesis testing, and multiple decision problems; linear models, analysis of variance, and regression; nonparametric and robust procedures; decision-theoretic setting. Bayesian methods.
Prerequisites: (EN.553.420 OR EN.553.620) AND ( AS.110.201 OR AS.110.212 OR EN.553.291 ); Students may receive credit for EN.550.430/EN.553.430 or EN.553.630, but not both.
Instructor(s): D. Athreya
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.431. Statistical Methods in Imaging. 3.0 Credits.
Denosing, segmentation, texture modeling, tracking, object recognition are challenging problems in imaging. We will present a collection of statistical models and methods in order to address these, including the E.M. algorithm, Maximum Entropy Modeling, Particle filtering, Markov Random Fields and Belief Propagation. Co-listed with EN.580.466. Some practice of Matlab or R is highly recommended.
Prerequisites: (AS.110.202 OR AS.110.211) AND (EN.550.310 OR EN.550.311 OR EN.550.420)
Instructor(s): Staff
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.432. Monte Carlo Methods. 3.0 Credits.
The objective of the course is to survey essential simulation techniques for popular stochastic models. The stochastic models may include classical time-series models, Markov chains and diffusion models. The basic simulation techniques covered will be useful in sample-generation of random variables, vectors and stochastic processes, and as advanced techniques, importance sampling, particle filtering and Bayesian computation may be discussed.
Prerequisites: Students may receive credit for EN.550.433/EN.553.433 or EN.553.633, but not both.; EN.550.430 OR EN.553.630.
Instructor(s): J. Spall
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.436. Data Mining. 4.0 Credits.
Data mining is a relatively new term used in the academic and business world, often associated with the development and quantitative analysis of very large databases. Its definition covers a wide spectrum of analytic and information technology topics, such as machine learning, artificial intelligence, statistical modeling, and efficient database development. This course will review these broad topics, and cover specific analytic and modeling techniques such as advanced data visualization, decision trees, neural networks, nearest neighbor, clustering, logistic regression, and association rules. Although some of the mathematics underlying these techniques will be discussed, our focus will be on the application of the techniques to real data and the interpretation of results. Because use of the computer is extremely important when “mining” large amounts of data, we will make substantial use of data mining software tools to learn the techniques and analyze datasets. Recommended Course Background: EN.553.413.
Prerequisites: Students may receive credit for EN.550.436/EN.553.436 or EN.553.636, but not both.; (AS.110.202 OR AS.110.211) AND (AS.110.201 OR AS.110.212 OR EN.550.291)
Instructor(s): T. Budavari
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.439. Time Series Analysis. 3.0 Credits.
Time series analysis from the frequency and time domain approaches. Descriptive techniques; regression analysis; trends, smoothing, prediction; linear systems; serial correlation; stationary processes; spectral analysis.
Prerequisites: (EN.553.310[C] OR EN.553.311 OR EN.553.420 OR EN.553.620) AND (AS.110.201 OR AS.110.212 OR EN.553.291); Students may receive credit for EN.550.439/EN.553.439 or EN.553.639, but not both.
Instructor(s): D. Naiman, F. Torcaso; M. Pemy
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.441. Equity Markets and Quantitative Trading. 3.0 Credits.
This course introduces equity markets from a mathematical point of view. The properties of equities and equity-linked instruments will be described. Several quantitative trading strategies will be studied. Order execution tactics and the effect of market structure will be analyzed. Students will select a specialized aspect of the equity markets to investigate and complete a related independent project.
Prerequisites: EN.553.442 OR EN.553.642 OR EN.553.444 OR EN.553.644 or instructor's permission. Students may receive credit for EN.550.441/EN.553.441 or EN.553.641, but not both.
Instructor(s): J. Miller
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.442. Investment Science. 4.0 Credits.
This course offers a rigorous treatment of the subject of investment as a scientific discipline. Mathematics is employed as the main tool to convey the principles of investment science and their use to make investment calculations for good decision-making. Topics covered in the course include the basic theory of interest and its application to fixed-income securities, cash flow analysis and capital budgeting, mean-variance portfolio theory, and the associated capital asset pricing model, utility function theory and risk analysis, derivative securities and basic option theory, portfolio evaluation. The student is expected to be comfortable with the use of mathematics as a method of deduction and problem solving. Students may not receive credit for both EN.550.342 and EN.553.442.
Prerequisites: Students may receive credit for only one of EN.550.342, EN.550.442, EN.553.442 or EN.553.642; (AS.110.107 OR AS.110.109 OR AS.110.113) AND (EN.553.291 OR AS.110.201 OR AS.110.212) AND (EN.550.310 OR EN.550.311 OR EN.553.420 OR EN.553.620 OR EN.550.430 EN.553.630)
Instructor(s): J. Miller
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.443. Financial Computing in C++. 4.0 Credits.
The first part of course, will introduce the basic concepts of C++ including variables, functions, pointers and references, function and operator overloading and along with inheritance and polymorphism, templates and the C++ Standard Library. Basic ideas of object-oriented design will be introduced. The second part of the course will cover computational techniques for solving mathematical problems arising in finance. Numerical solution of parabolic partial differential equations for option valuation and their relation to tree methods together with a basic introduction of concepts such as convergence and stability as applied to finite difference schemes. Prerequisites EN.553.427 Stochastic Processes and Applications to Finance. No prior experience with C/C++ is required.
Prerequisites: EN.550.427
Instructor(s): M. Bichuch
Area: Quantitative and Mathematical Sciences.
EN.553.444. Introduction to Financial Derivatives. 4.0 Credits.
This course will develop the mathematical concepts and techniques for modeling cash instruments and their hybrids and derivatives.
Prerequisites: Students may receive credit for EN.550.444/EN.553.444 or EN.553.644, but not both.;AS.110.302 AND EN.553.420
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.445. Interest Rate and Credit Derivatives. 4.0 Credits.
Advances in corporate finance, investment practice and the capital markets have been driven by the development of a mathematically rigorous theory for financial instruments and the markets in which they trade. This course builds on the concepts, techniques, instruments and markets introduced in EN.553.444. In addition to new topics in credit enhancement and structured securities, the focus is expanded to include applications in portfolio theory and risk management, and covers some numerical and computational approaches.
Prerequisites: EN.553.444 OR EN.553.644;Students may receive credit for EN.550.445/EN.553.445 or EN.553.645, but not both.
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.446. Risk Measurement/Management in Financial Markets. 4.0 Credits.
This course applies advanced mathematical techniques to the measurement, analysis, and management of risk. The focus is on financial risk. Sources of risk for financial instruments (e.g., market risk, interest rate risk, credit risk) are analyzed; models for these risk factors are studied and the limitation, shortcomings and compensatory techniques are addressed.
Prerequisites: Students may receive credit for EN.550.446/EN.553.446 or EN.553.646, but not both.;EN.553.444 OR EN.553.644
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.447. Quantitative Portfolio Theory and Performance Analysis. 4.0 Credits.
This course focuses on modern quantitative portfolio theory, models, and analysis. Topics include intertemporal approaches to modeling and optimizing asset selection and asset allocation; benchmarks (indexes), performance assessment (including, Sharpe, Treynor and Jensen ratios) and performance attribution; immunization theorems; alpha-beta separation in management, performance measurement and attribution; Replicating Benchmark Index (RBI) strategies using cash securities / derivatives; Liability-Driven Investment (LDI); and the taxonomy and techniques of strategies for traditional management: Passive, Quasi-Passive (Indexing) Semi-Active (Immunization & Dedicated) Active (Scenario, Relative Value, Total Return and Optimization). In addition, risk management and hedging techniques are also addressed.
Prerequisites: Students may receive credit for 550.447/553.447 OR EN.553.647, but not both.
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.448. Financial Engineering and Structured Products. 4.0 Credits.
This course focuses on structured securities and the structuring of aggregates of financial instruments into engineered solutions of problems in capital finance. Topics include the fundamentals of creating asset-backed and structured securities—including mortgage-backed securities (MBS), stripped securities, collateralized mortgage obligations (CMOs), and other asset-backed collateralized debt obligations (CDOs)—structuring and allocating cash-flows as well as enhancing credit; equity hybrids and convertible instruments; asset swaps, credit derivatives and total return swaps; assessment of structure-risk interest rate-risk and credit-risk as well as strategies for hedging these exposures; managing portfolios of structured securities; and relative value analysis (including OAS and scenario analysis).
Prerequisites: EN.550.444[C] OR EN.550.442[C]
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.449. Advanced Equity Derivatives. 4.0 Credits.
This course will cover the pricing, trading and risk management of equity derivatives, with emphasis on more exotic derivatives such as path-dependent and multi-asset derivatives. The course will emphasize practical issues: students will build their own pricing and risk management tools, and gain experience simulating the dynamic hedging of a complex derivatives portfolio. Students will practice structuring and selling equity derivative products. Pricing issues such a model selection, unobservable input parameters and calibration will be discussed, and students will learn techniques to manage the often highly nonlinear and discontinuous risks associated with these products. The course will have a significant computing component: both in the classroom and as homework projects, students will use Excel, write VBA macros and write and call C++ routines in the Microsoft Windows environment (which is the most common computing environment used by the financial industry).
Prerequisites: Students may receive credit for EN.550.449/EN.553.449 or EN.553.649, but not both.;EN.553.444 OR EN.553.644
Instructor(s): J. Miller
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.450. Computational Molecular Medicine. 4.0 Credits.
Computational systems biology has emerged as the dominant framework for analyzing high-dimensional “omics” data in order to uncover the relationships among molecules, networks and disease. In particular, many of the core methodologies are based on statistical modeling, including machine learning, stochastic processes and statistical inference. We will cover the key aspects of this methodology, including measuring associations, testing multiple hypotheses, and learning predictors, Markov chains and graphical models. In addition, by studying recent important articles in cancer systems biology, we will illustrate how this approach enhances our ability to annotate genomes, discover molecular disease networks, detect disease, predict clinical outcomes, and characterize disease progression. Whereas a good foundation in probability and statistics is necessary, no prior exposure to molecular biology is required (although helpful).
Prerequisites: ( EN.553.420 OR EN.553.620) AND ( EN.553.430 OR EN.553.630 ) OR equivalent courses in probability and statistics.;Students may receive credit for EN.550.450/EN.553.450 or EN.553.650, but not both.
Instructor(s): D. Geman; J. Bader
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.453. Mathematical Game Theory. 4.0 Credits.
Mathematical analysis of cooperative and noncooperative games. Theory and solution methods for matrix game (two players, zero-sum payoffs, finite strategy sets), games with a continuum of strategies, N-player games, games in rule-defined form. The roles of information and memory. Selected applications to economic, recreational, and military situations.
Prereq: Multivariable Calculus, probability, linear algebra.
Prerequisites: Students may receive credit for EN.550.453/EN.553.453 or EN.553.653, but not both. (EN.550.202 OR AS.110.211) AND (EN.550.420 OR EN.553.620) AND (EN.550.291 OR AS.110.201 OR AS.110.212).
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.457. Topics in Operations Research. 1.5 Credits.
Study in depth of a special mathematical or computational area of operations research, or a particular application area. Recent topics: decision theory, mathematical finance, optimization software.
Prerequisites: Students may receive credit for EN.550.463/EN.553.463 or EN.553.464, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.461. Optimization in Finance. 4.0 Credits.
A survey of many of the more important optimization methods and tools that are found to be useful in financial applications.
Prerequisites: Students may receive credit for EN.550.461/EN.553.461 or EN.553.661, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.463. Network Models in Operations Research. 4.0 Credits.
In-depth mathematical study of network flow models in operations research, with emphasis on combinatorial approaches for solving them. Introduction to techniques for constructing efficient algorithms, and to some related data structures, used in solving shortest-path, maximum-volume, flow, and minimum-cost flow problems. Emphasis on linear models and flows, with brief discussion of non-linear models and network design.
Prerequisites: Students may receive credit for EN.550.463/EN.553.463 or EN.553.663, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.465. Introduction to Convexity. 4.0 Credits.
Convexity is a simple mathematical concept that has become central in a diverse range of applications in engineering, science and business applications. Our main focus from the applications perspective will be the use of convexity within optimization problems, where convexity plays a key role in identifying the "easy" problems from the "hard" ones. The course will have an equal emphasis on expositing the rich mathematical structure of the field itself (properties of convex sets, convex functions, Helly-Caratheodory-Radon type theorems, polarity/duality, subdifferential calculus, polyhedral theory), and demonstrating how these ideas can be leveraged to model and solve optimization problems (via a detailed study of linear programming and basics of nonlinear convex optimization). Recommend Course Background: Familiarity with basic real analysis, linear algebra.
Prerequisites: Students may receive credit for EN.550.465/EN.553.465 or EN.553.665, but not both.
Instructor(s): A. Basu
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.471. Combinatorial Analysis. 4.0 Credits.
Recommended Course Background: AS.553.291 or AS.110.201
Prerequisites: Students may receive credit for EN.550.471/EN.553.471 or EN.550.671/EN.553.671, but not both.
Corequisites: EN.553.171 may not be taken concurrently with EN.553.471 or EN.553.472.
Instructor(s): E. Scheinerman
Area: Quantitative and Mathematical Sciences.

EN.553.472. Graph Theory. 4.0 Credits.
Study of systems of “vertices” with some pairs joined by “edges.” Theory of adjacency, connectivity, traversability, feedback, and other concepts underlying properties important in engineering and the sciences. Topics include paths, cycles, and trees; routing problems associated with Euler and Hamilton; design of graphs realizing specified incidence conditions and other constraints. Attention directed toward problem solving, algorithms, and applications. One or more topics taken up in greater depth.
Prerequisites: EN.550.291 OR AS.110.201 OR AS.110.212; Students may receive credit for EN.550.472/EN.553.472 or EN.553.672, but not both.
Corequisites: EN.550.171 may not be taken concurrently with EN.550.471 or EN.550.472
Instructor(s): E. Gnang
Area: Quantitative and Mathematical Sciences.

EN.553.473. Introduction to Nonlinear Dynamics and Chaos. 3.0 Credits.
An introduction to the phenomenology of nonlinear dynamic behavior with emphasis on models of actual physical, chemical, and biological systems, involving an interdisciplinary approach to ideas from mathematics, computing, and modeling. The common features of the development of chaotic behavior in both mathematical models and experimental studies are stressed, and the use of modern data-mining tools to analyze dynamic data will be explored. Some computing experience is desirable. Emphasis will be placed on the geometric/visual computer-aided description and understanding of dynamics and chaos.
Prerequisites: Students may receive credit for only one of EN.553.473 OR EN.550.673 OR EN.550.468 OR EN.540.668 OR (AS.110.201 OR AS.110.212) AND (AS.110.302 OR AS.110.306) OR EN.553.291
Instructor(s): Y. Kevrekidis
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.485. Introduction to Harmonic Analysis and Its Applications. 4.0 Credits.
The course is an introduction to methods in harmonic analysis, in particular Fourier series, Fourier integrals, and wavelets. These methods will be introduced rigorously, together with their motivations and applications to the analysis of basic partial differential equations and integral kernels, signal processing, inverse problems, and statistical/machine learning. Co-listed with EN.553.685 and AS.110.433
Prerequisites: (AS.110.201 OR AS.110.212 OR EN.550.291/EN.553.291) AND (AS.110.202 OR AS.110.211) AND (AS.110.405 OR AS.110.415); Students may receive credit for only one of the following: AS.110.433, EN.553.485, or EN.553.685.
Instructor(s): M. Maggioni.
EN.553.487. Numerical Methods for Financial Mathematics. 3.0 Credits. Diffusion processes described by stochastic differential equations (SDEs) play an important role in the world of finance; one important tool in the study of complex SDEs is numerical simulation. In this class we concentrate on the numerical integration of SDEs, which requires a more complex mathematical construction than the integration of ordinary differential equations (ODEs). The algorithms for approximating SDE solutions are constructed on the basis of stochastic Taylor expansions, which can become particularly elaborate for systems with multiple noise sources. We propose to follow in detail all the steps from writing down an SDE to writing and running the computer code that will generate a "solution" of that SDE with a well-defined error. Python will be used for all applications, and more general programming concepts will be discussed as needed.

Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

EN.553.488. Financial Computing I. 3.0 Credits. This course is aimed for student who need to develop the ability to use programming languages to solve data analytic problems that are likely to arise in financial applications. The C programming language will be introduced, and students will be exposed to some of the more useful C++ enhancements. The Python language will be introduced as well. Students should be comfortable using computers but no prior programming background is required. Some finance background is helpful but not necessary.

Prerequisites: Students may receive credit for EN.550.488/EN.553.488 or EN.553.688, but not both.;EN.553.310 OR EN.553.311 OR ( EN.553.420 EN.553.620) AND (EN.553.430 OR EN.553.630)
Instructor(s): D. Naiman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.492. Mathematical Biology. 3.0 Credits.
This course will examine the mathematical methods relevant to modeling biological phenomena, particularly dynamical systems and probability. Topics include ordinary differential equations and their simulation; stability and phase plane analysis; branching processes; Markov chains; and stochastically perturbed systems. Biological applications will be drawn from population growth, predator-prey dynamics, epidemiology, genetics, intracellular transport, and neuroscience.

Prerequisites: ( EN.553.420 OR EN.553.620 ) AND ( AS.110.201 OR AS.110.212 ) AND ( AS.110.302 OR AS.110.306 OR EN.553.291 );Students may receive credit for EN.550.492/EN.553.492 or EN.553.692, but not both.
Instructor(s): D. Athreya
Area: Natural Sciences, Quantitative and Mathematical Sciences.

EN.553.493. Mathematical Image Analysis. 3.0 Credits.
This course gives an overview of various mathematical methods related to several problems encountered in image processing and analysis, and presents numerical schemes to address them. It will focus on problems like image denoising and deblurring, contrast enhancement, segmentation and registration. The different mathematical concepts shall be introduced during the course; they include in particular functional spaces such as Sobolev and BV, Fourier and wavelet transforms, as well as some notions from convex optimization and numerical analysis. Most of such methods will be illustrated with algorithms and simulations on discrete images, using MATLAB. Prerequisites: Linear algebra, multivariate calculus, basic programming in MATLAB. Recommended Course Background: Real analysis
Prerequisites: ( AS.110.202 OR AS.110.211 ) AND ( EN.550.291 OR AS.110.201 OR AS.110.212 );Students may receive credit for EN.550.493/EN.553.493 or EN.553.693, but not both.
Instructor(s): P. Escande
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.494. Applied and Computational Linear Algebra. 3.0 Credits. In this seminar we plan to discuss generalizations of theorems and algorithms from matrix theory to hypermatrices. More specifically the seminar will discuss hypermatrix/tensor algebras, rank, spectra and transforms. Using the python friendly free open-source mathematics software SageMath and the hypermatrix algebra package we will discuss applications of hypermatrices to combinatorics, machine learning and data analysis. Preliminary knowledge of the Python language is not required.

Prerequisites: Students may receive credit for EN.550.494/EN.553.494 or EN.553.694, but not both.;AS.110.201 OR AS.110.212 OR EN.550.291
Instructor(s): E. Gnang
Area: Quantitative and Mathematical Sciences.

EN.553.500. Undergraduate Research. 1.0 - 3.0 Credits.
Reading, research, or project work for undergraduate students. Pre-arranged individually between students and faculty.
Instructor(s): D. Fishkind; E. Scheinerman; J. Wierman; T. Budavari.

EN.553.501. Senior Thesis. 3.0 Credits.
Instructor(s): Staff.

EN.553.502. Undergraduate Independent Study. 1.0 - 3.0 Credits.
Reading, research, or project work for undergraduate students. Pre-arranged individually between students and faculty. Recent topics and activities: percolation models, data analysis, course development assistance, and dynamical systems.
Instructor(s): Staff.

EN.553.503. Preparation for Research. 1.0 Credit.
Primarily an independent study course. Readings, assignments, and discussion to prepare students for research in applied mathematics and statistics. Topics include the research process, problem-solving, mathematical writing, LaTeX, Beamer, reading mathematics, literature search, oral presentations, REU programs, and the publication process. Brief meetings to be arranged. Students are expected to spend 3 to 4 hours per week in addition to the meetings. Grading is Satisfactory/Unsatisfactory only.
Instructor(s): J. Wierman.

EN.553.505. Applied Mathematics Pedagogy. 3.0 Credits. 
Instructor Permission Required - Opportunity for students to participate.
EN.553.512. Group Undergraduate Research. 1.0 - 3.0 Credits.
Reading, research, or project work for undergraduate students. Pre-
arranged meetings between students and faculty. This section has a
weekly research group meeting that students are expected to attend.
Instructor(s): D. Fishkind; E. Fertig; E. Scheinerman.

EN.553.552. Undergraduate Internship. 1.0 Credit.
Instructor(s): Staff.
EN.553.590. Internship - Summer. 1.0 Credit.
Instructor(s): Staff.
EN.553.597. Research-Summer. 3.0 Credits.
Instructor(s): Staff.
EN.553.599. Independent Study. 3.0 Credits.
Instructor(s): D. Fishkind; E. Scheinerman; F. Torcaso.

EN.553.600. Mathematical Modeling and Consulting. 4.0 Credits.
Creating, analyzing and evaluating optimization and mathematical
models using case studies. Project-oriented practice and guidance in
modeling techniques, with emphasis on communication of methods and
results. Applications may include transportation networks, scheduling,
industrial processes, and telecommunications. Computation will
be emphasized throughout using MATLAB. Recommend Course
Background: EN.553.361 OR EN.553.362.
Prerequisites: Students may receive credit for EN.550.400/EN.553.400 or
EN.553.600, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.613. Applied Statistics and Data Analysis. 4.0 Credits.
An introduction to basic concepts, techniques, and major computer
software packages in applied statistics and data analysis. Topics include
numerical descriptive statistics, observations and variables, sampling
distributions, statistical inference, linear regression, multiple regression,
design of experiments, nonparametric methods, and sample surveys.
Real-life data sets are used in lectures and computer assignments.
Intensive use of statistical packages such as S+ to analyze data.
Recommend Course Background: EN.553.112 OR EN.553.310 OR
EN.553.311 OR EN.553.420.
Prerequisites: Students may receive credit for EN.550.413/EN.553.413 or
EN.553.613, but not both.
Instructor(s): M. Tang
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.614. Applied Statistics and Data Analysis II. 3.0 Credits.
Part II of a sequence on data analysis and linear models. Topics include
categorical and discrete data analysis, mixed models, semiparametric
and nonparametric regression, and generalized additive models.
Applications of these methods using the R environment for statistical
computing will be emphasized.
Prerequisites: Students may receive credit for EN.550.414/EN.553.414 or
EN.553.614, but not both.
Instructor(s): M. Tang
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.620. Introduction to Probability. 4.0 Credits.
Probability and its applications, at the calculus level. Emphasis on
methods of application and on rigorous mathematical demonstration.
Probability, combinatorial probability, random variables, distribution
functions, important probability distributions, independence, conditional
probability, moments, covariance and correlation, limit theorems. Auditors
are not permitted. Recommended course background: (AS.110.107 or
AS.110.109 or AS.110.113) and previously or concurrently (AS.110.202 or
AS.110.201 or AS.110.212).
Prerequisites: Students may receive credit for EN.550.420/EN.553.420 or
EN.553.620, but not both.
Instructor(s): J. Wierman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.626. Introduction to Stochastic Processes. 4.0 Credits.
Mathematical theory of stochastic processes. Emphasis on deriving
the dependence relations, statistical properties, and sample path
behavior including random walks, Markov chains (both discrete and
continuous time), Poisson processes, martingales, and Brownian motion.
Applications that illuminate the theory. Students may receive credit
for only one of EN.553.426, EN.553.427, EN.553.626, or EN.553.627.
Recommended course background: EN.553.620 and (EN.553.291 OR
AS.110.201 OR AS.110.212).
Prerequisites: Students may receive credit for EN.550.426/EN.553.426 or
EN.553.626, but not both.
Instructor(s): J. Wierman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.627. Stochastic Processes and Applications to Finance. 4.0
Credits.
A development of stochastic processes with substantial emphasis on
applications in finance, economics, business, and actuarial science.
Relevant concepts from probability theory, particularly conditional
probability and conditional expectation, will be briefly reviewed. Important
concepts in stochastic processes will be introduced in the simpler
setting of discrete-time processes, including random walks, Markov
chains, and discrete-time martingales, then used to motivate more
advanced material. Most of the course will concentrate on continuous-
time stochastic processes, particularly martingales, Brownian motion,
diffusions, and basic tools of stochastic calculus. Examples will focus
on applications in finance, economics, business, and actuarial science.
Recommended Course Background: EN.553.620.
Prerequisites: Students may receive credit for only one of EN.550.427,
EN.553.427, EN.553.627
Instructor(s): M. Bichuch
Area: Quantitative and Mathematical Sciences.

EN.553.628. Stochastic Processes and Applications to Finance II. 4.0
Credits.
A basic knowledge of stochastic calculus and Brownian motion is
assumed. Topics include stochastic differential equations, the Feynman-
Kac formula and connections to partial differential equations, changes
of measure, fundamental theorems of asset pricing, martingale
representations, first passage times and pricing of path-dependent
options, and jump processes.
Prerequisites: Students may receive credit for EN.550.428/EN.553.428 or
EN.553.628, but not both.
Instructor(s): J. Miller
Area: Quantitative and Mathematical Sciences.
EN.553.629. Introduction to Research in Discrete Probability. 3.0 Credits.
Aspects of the research process, including reading and writing mathematics, LaTeX, literature search, problem identification, problem-solving, oral presentations, Beamer, conference attendance, publication of results, and research ethics. An initial research experience, individually and/or in groups, with students identifying and developing projects in discrete mathematics and probability, such as percolation, random graphs, random walks, birthday problems, gambler’s ruin, coupon collector problems, and self-avoiding walks. Instructor's permission required.
Prerequisites: Students may receive credit for EN.550.429/EN.553.429 or EN.553.629, but not both.
Instructor(s): T. Budavari
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.630. Introduction to Statistics. 4.0 Credits.
Introduction to the basic principles of statistical reasoning and data analysis. Emphasis on techniques of application. Classical parametric estimation, hypothesis testing, and multiple decision problems; linear models, analysis of variance, and regression; nonparametric and robust procedures; decision-theoretic setting, Bayesian methods. Recommended Course Background: EN.553.620 AND ( AS.110.201 OR AS.110.212 OR EN.553.291 ).
Prerequisites: Students may receive credit for EN.550.430/EN.553.430 or EN.553.630, but not both.
Instructor(s): J. Wierman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.630. Monte Carlo Methods. 4.0 Credits.
The objective of the course is to survey essential simulation techniques for popular stochastic models. The stochastic models may include classical time-series models, Markov chains and diffusion models. The basic simulation techniques covered will be useful in sample-generation of random variables, vectors and stochastic processes, and as advanced techniques, importance sampling, particle filtering and Bayesian computation may be discussed. Recommended Course Background: EN.553.630.
Prerequisites: Students may receive credit for EN.550.433/EN.553.433 or EN.553.633, but not both.
Instructor(s): J. Spall
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.630. Data Mining. 4.0 Credits.
Data mining is a relatively new term used in the academic and business world, often associated with the development and quantitative analysis of very large databases. Its definition covers a wide spectrum of analytic and information technology topics, such as machine learning, artificial intelligence, statistical modeling, and efficient database development. This course will review these broad topics, and cover specific analytic and modeling techniques such as advanced data visualization, decision trees, neural networks, nearest neighbor, clustering, logistic regression, and association rules. Although some of the mathematics underlying these techniques will be discussed, our focus will be on the application of the techniques to real data and the interpretation of results. Because use of the computer is extremely important when “mining” large amounts of data, we will make substantial use of data mining software tools to learn the techniques and analyze datasets. Recommended Course Background: ( AS.110.202 OR AS.110.211 ) AND ( AS.110.201 OR AS.110.212 OR EN.553.291 ).
Prerequisites: Students may receive credit for EN.550.436/EN.553.436 or EN.553.636, but not both.
Instructor(s): T. Budavari
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.639. Time Series Analysis. 3.0 Credits.
Time series analysis from the frequency and time domain approaches. Descriptive techniques; regression analysis; trends, smoothing, prediction; linear systems; serial correlation; stationary processes; spectral analysis. Recommended course background: EN.553.620 and (AS.110.201 OR AS.110.212 OR EN.553.291)
Prerequisites: Students may receive credit for EN.550.439/EN.553.439 or EN.553.639, but not both.
Instructor(s): D. Naiman; F. Torcaso; M. Pemy
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.641. Equity Markets and Quantitative Trading. 3.0 Credits.
This course introduces equity markets from a mathematical point of view. The properties of equities and equity-linked instruments will be described. Several quantitative trading strategies will be studied. Order execution tactics and the effect of market structure will be analyzed. Students will select a specialized aspect of the equity markets to investigate and complete a related independent project. Recommended Course Background: EN.553.642 OR EN.553.644 OR Instructor's Permission.
Prerequisites: Students may receive credit for EN.550.441/EN.553.441 or EN.553.641, but not both.
Instructor(s): J. Miller
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.642. Investment Science. 4.0 Credits.
This course offers a rigorous treatment of the subject of investment as a scientific discipline. Mathematics is employed as the main tool to convey the principles of investment science and their use to make investment calculations for good decision-making. Topics covered in the course include the basic theory of interest and its application to fixed-income securities, cash flow analysis and capital budgeting, mean-variance portfolio theory, and the associated capital asset pricing model, utility function theory and risk analysis, derivative securities and basic option theory, portfolio evaluation. The student is expected to be comfortable with the use of mathematics as a method of deduction and problems solving. Recommended Course Background: ( AS.110.107 OR AS.110.109 OR AS.110.113 ) AND ( EN.553.291 OR AS.110.201 OR AS.110.212 ) AND ( EN.553.310 OR EN.553.311 OR EN.553.420 OR EN.553.430).
Prerequisites: Students may receive credit for EN.550.342 or EN.550.442/EN.553.442 or EN.553.642, but not both.
Instructor(s): J. Miller
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.644. Introduction to Financial Derivatives. 4.0 Credits.
This course will develop the mathematical concepts and techniques for modeling cash instruments and their hybrids and derivatives. Recommended Course Background: AS.110.302 AND EN.553.620.
Prerequisites: Students may receive credit for EN.550.444/EN.553.444 or EN.553.644, but not both.
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.645. Interest Rate and Credit Derivatives. 4.0 Credits.
Advances in corporate finance, investment practice and the capital markets have been driven by the development of a mathematically rigorous theory for financial instruments and the markets in which they trade. This course builds on the concepts, techniques, instruments and markets introduced in EN.553.644. In addition to new topics in credit enhancement and structured securities, the focus is expanded to include applications in portfolio theory and risk management, and covers some numerical and computational approaches. Recommended Course Background: EN.553.644
Prerequisites: Students may receive credit for EN.550.445/EN.553.445 or EN.553.645, but not both.
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.646. Risk Measurement/Management in Financial Markets. 4.0 Credits.
This course applies advanced mathematical techniques to the measurement, analysis, and management of risk. The focus is on financial risk. Sources of risk for financial instruments (e.g., market risk, interest rate risk, credit risk) are analyzed; models for these risk factors are studied and the limitation, shortcomings and compensatory techniques are addressed. Recommended Course Background: EN.553.644.
Prerequisites: Students may receive credit for EN.550.446/EN.553.446 or EN.553.646, but not both.
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.647. Quantitative Portfolio Theory and Performance Analysis. 4.0 Credits.
This course focuses on modern quantitative portfolio theory, models, and analysis. Topics include intertemporal approaches to modeling and optimizing asset selection and asset allocation; benchmarks (indexes), performance assessment (including, Sharpe, Treynor and Jenson ratios) and performance attribution; immunization theorems; alpha-beta separation in management, performance measurement and attribution; Replicating Benchmark Index (RBI) strategies using cash securities / derivatives; Liability-Driven Investment (LDI); and the taxonomy and solution methods for matrix game (two players, zero-sum payoffs, finite strategy sets), games with a continuum of strategies, N-player games, games in rule-defined form. The roles of information and memory. Selected applications to economic, recreational, and military situations. Mathematical analysis of cooperative and noncooperative games. Theory and solution methods for matrix game (two players, zero-sum payoffs, finite strategy sets), games with a continuum of strategies, N-player games, games in rule-defined form. The roles of information and memory. Selected applications to economic, recreational, and military situations. Recommended Course Background: EN.553.620 AND EN.553.630.
Prerequisites: Students may receive credit for EN.550.447 OR EN.553.447) OR EN.553.647, but not both.
Instructor(s): D. Audley
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.648. Advanced Equity Derivatives. 4.0 Credits.
This course will cover the pricing, trading and risk management of equity derivatives, with emphasis on more exotic derivatives such as path-dependent and multi-asset derivatives. The course will emphasize practical issues: students will build their own pricing and risk management tools, and gain experience simulating the dynamic hedging of a complex derivatives portfolio. Students will practice structuring and selling equity derivative products. Pricing issues such a model selection, unobservable input parameters and calibration will be discussed, and students will learn techniques to manage the often highly nonlinear and discontinuous risks associated with these products. The course will have a significant computing component: both in the classroom and as homework projects, students will use Excel, write VBA macros and write and call C++ routines in the Microsoft Windows environment (which is the most common computing environment used by the financial industry). Recommended Course Background: EN.553.644.
Prerequisites: Students may receive credit for EN.550.449/EN.553.449 or EN.553.649, but not both.
Instructor(s): J. Miller
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.650. Computational Molecular Medicine. 4.0 Credits.
Computational systems biology has emerged as the dominant framework for analyzing high-dimensional "omics" data in order to uncover the relationships among molecules, networks and disease. In particular, many of the core methodologies are based on statistical modeling, including machine learning, stochastic processes and statistical inference. We will cover the key aspects of this methodology, including measuring associations, testing multiple hypotheses, and learning predictors, Markov chains and graphical models. In addition, by studying recent important articles in cancer systems biology, we will illustrate how this approach enhances our ability to annotate genomes, discover molecular disease networks, detect disease, predict clinical outcomes, and characterize disease progression. Whereas a good foundation in probability and statistics is necessary, no prior exposure to molecular biology is required (although helpful). Recommended Course Background: EN.553.620 AND EN.553.630.
Prerequisites: Students may receive credit for EN.550.450/EN.553.450 or EN.553.650, but not both.
Instructor(s): D. Geman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.653. Mathematical Game Theory. 4.0 Credits.
Mathematical analysis of cooperative and noncooperative games. Theory and solution methods for matrix game (two players, zero-sum payoffs, finite strategy sets), games with a continuum of strategies, N-player games, games in rule-defined form. The roles of information and memory. Selected applications to economic, recreational, and military situations. Prereq: Multivariable Calculus, probability, linear algebra. Recommended Course Background: (AS.110.202 OR AS.110.211) AND EN.553.620 AND (EN.553.291 OR AS.110.201 OR AS.110.212)
Prerequisites: Students may receive credit for EN.550.453/EN.553.453 or EN.553.653, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.
EN.553.661. Optimization in Finance. 4.0 Credits.
A survey of many of the more important optimization methods and tools that are found to be useful in financial applications. Recommended Course Background: EN.553.642 OR EN.553.644.
Prerequisites: Students may receive credit for EN.550.461/EN.553.461 or EN.553.661, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.663. Network Models in Operations Research. 4.0 Credits.
In-depth mathematical study of network flow models in operations research, with emphasis on combinatorial approaches for solving them. Introduction to techniques for constructing efficient algorithms, and to some related data structures, used in solving shortest-path, maximum-volume, flow, and minimum-cost flow problems. Emphasis on linear models and flows, with brief discussion of non-linear models and network design. Recommended Course Background: EN.553.361 OR EN.553.761 OR EN.553.661.
Prerequisites: Students may receive credit for EN.550.463/EN.553.463 or EN.553.663, but not both.
Instructor(s): B. Castello
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.665. Introduction to Convexity. 4.0 Credits.
Convexity is a simple mathematical concept that has become central in a diverse range of applications in engineering, science and business applications. Our main focus from the applications perspective will be the use of convexity within optimization problems, where convexity plays a key role in identifying the "easy" problems from the "hard" ones. The course will have an emphasis on expositing the rich mathematical structure of the field itself (properties of convex sets, convex functions, Helly-Caratheorody-Radon type theorems, polarity/duality, subdifferential calculus, polyhedral theory), and demonstrating how these ideas can be leveraged to model and solve optimization problems (via a detailed study of linear programming and basics of nonlinear convex optimization). Recommend Course Background: Familiarity with basic real analysis, linear algebra.
Prerequisites: Students may receive credit for EN.550.465 /EN.553.465 or EN.553.665, but not both.
Instructor(s): A. Basu.

EN.553.671. Combinatorial Analysis. 4.0 Credits.
An introduction to combinatorial analysis at the graduate level. Meets concurrently with 553.471. Counting techniques: generating functions, recurrence relations, Polya's theorem. Combinatorial designs: Latin squares, finite geometries, balanced incomplete block designs. Emphasis on problem solving. Recommended Course Background: EN.553.291 or AS.110.201
Prerequisites: Students may receive credit for EN.550.471/EN.553.471 or EN.553.671, but not both.
Instructor(s): E. Scheinerman.

EN.553.672. Graph Theory. 4.0 Credits.
Study of systems of "vertices" with some pairs joined by "edges." Theory of adjacency, connectivity, traversability, feedback, and other concepts underlying properties important in engineering and the sciences. Topics include paths, cycles, and trees; routing problems associated with Euler and Hamilton; design of graphs realizing specified incidence conditions and other constraints. Attention directed toward problem solving, algorithms, and applications. One or more topics taken up in greater depth. Recommended Course Background: (EN.553.291 OR AS.110.201 OR AS.110.212)
Prerequisites: EN.550.291 OR AS.110.201 OR AS.110.212; Students may receive credit for EN.550.472/EN.553.472 or EN.553.672, but not both.
Instructor(s): E. Gnang.

EN.553.673. Introduction to Nonlinear Dynamics and Chaos. 3.0 Credits.
An introduction to the phenomenology of nonlinear dynamic behavior with emphasis on models of actual physical, chemical, and biological systems, involving an interdisciplinary approach to ideas from mathematics, computing, and modeling. The common features of the development of chaotic behavior in both mathematical models and experimental studies are stressed, and the use of modern data-mining tools to analyze dynamic data will be explored. Some computing experience is desirable. Emphasis will be placed on the geometric/visual computer-aided description and understanding of dynamics and chaos. Recommended course background: ([AS.110.201 or AS.110.212] and [AS.110.302 or AS.110.306]) or EN.553.291.
Prerequisites: Students may receive credit for only one of EN.553.473 OR EN.553.673 OR EN.540.468 OR EN.540.668, ([AS.110.201 OR AS.110.212] AND [AS.110.302 OR AS.110.306]) OR EN.553.291
Instructor(s): Y. Kevrekidis.

EN.553.685. Introduction to Harmonic Analysis and Its Applications. 4.0 Credits.
The course is an introduction to methods in harmonic analysis, in particular Fourier series, Fourier integrals, and wavelets. These methods will be introduced rigorously, together with their motivations and applications to the analysis of basic partial differential equations and integral kernels, signal processing, inverse problems, and statistical/machine. Recommended Course Background: (AS.110.201 OR AS.110.212 OR EN.553.291) AND (AS.110.202 OR AS.110.211) AND (AS.110.405 OR AS.110.415)
Prerequisites: Students may receive credit for only one of the following: AS.110.433, EN.553.485, or EN.553.685.
Instructor(s): M. Maggioni.

EN.553.688. Financial Computing I. 3.0 Credits.
The course is an introduction to methods in harmonic analysis, in particular Fourier series, Fourier integrals, and wavelets. These methods will be introduced rigorously, together with their motivations and applications to the analysis of basic partial differential equations and integral kernels, signal processing, inverse problems, and statistical/machine. Recommended Course Background: (AS.110.201 OR AS.110.212 OR EN.553.291) AND (AS.110.202 OR AS.110.211) AND (AS.110.405 OR AS.110.415)
Prerequisites: Students may receive credit for only one of the following: AS.110.433, EN.553.485, or EN.553.685.
Instructor(s): M. Maggioni.
EN.553.692. Mathematical Biology. 3.0 Credits.
This course will examine the mathematical methods relevant to modeling biological phenomena, particularly dynamical systems and probability. Topics include ordinary differential equations and their simulation; stability and phase plane analysis; branching processes; Markov chains; and stochastically perturbed systems. Biological applications will be drawn from population growth, predator-prey dynamics, epidemiology, genetics, intracellular transport, and neuroscience. Recommended Course Background: EN.553.620 AND (AS.110.201 OR AS.110.212) AND (AS.110.302 OR AS.110.306 OR EN.553.291)
Prerequisites: Students may receive credit for EN.550.492/EN.553.492 or EN.553.692, but not both.
Instructor(s): D. Athreya
Area: Natural Sciences, Quantitative and Mathematical Sciences.

EN.553.693. Mathematical Image Analysis. 3.0 Credits.
This course gives an overview of various mathematical methods related to several problems encountered in image processing and analysis, and presents numerical schemes to address them. It will focus on problems like image denoising and deblurring, contrast enhancement, segmentation and registration. The different mathematical concepts shall be introduced during the course; they include in particular functional spaces such as Sobolev and BV, Fourier and wavelet transforms, as well as some notions from convex optimization and numerical analysis. Most of such methods will be illustrated with algorithms and simulations on discrete images, using MATLAB. Prerequisites: linear algebra, multivariate calculus, basic programming in MATLAB. Recommended Course Background: (AS.110.202 OR AS.110.211) AND (EN.553.291 OR AS.110.201 OR AS.110.212)
Prerequisites: Students may receive credit for EN.550.493/EN.553.493 or EN.553.693, but not both.
Instructor(s): P. Escande
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.694. Applied and Computational Linear Algebra. 3.0 Credits.
In this seminar we plan to discuss generalizations of theorems and algorithms from matrix theory to hypermatrices. More specifically the seminar will discuss hypermatrix/tensor algebras, rank, spectra and transforms. Using the python friendly free open-source mathematics software SageMath and the hypermatrix algebra package we will discuss applications of hypermatrices to combinatorics, machine learning and data analysis. Preliminary knowledge of the Python language is not required. Recommended Course Background: AS.110.212 OR AS.110.201 OR EN.553.291.
Prerequisites: Students may receive credit for EN.553.494 or EN.553.694, but not both.
Instructor(s): E. Gnang.

EN.553.700. Master’s Research. 3.0 - 10.0 Credits.
Reading, research, or project work for Master’s level students. Arranged individually between students and faculty.
Instructor(s): Staff.

EN.553.701. Real Analysis: Preparation for the Ph.D. Introductory Examination. 4.0 Credits.
This course is designed to prepare students for the Real Analysis part of the introductory exam of the Department of Applied Mathematics and Statistics. In this course we will cover fundamental topics in real analysis, such as, Set Theory, The Topology of Euclidean Space, Continuuous Mappings, Uniform Convergence, Differentiable Mappings, Inverse & Implicit Function Theorems, Integration Theory, Fourier Series, and Basics of Differential Equations.
Instructor(s): N. Charon.

EN.553.720. Probability Theory I. 4.0 Credits.
The course objectives are to develop probabilistic reasoning and problem solving approaches, to provide a rigorous mathematical basis for probability theory, and to examine several important results in the theory of probability. Topics include axiomatic probability, independence, random variables and their distributions, expectation, integration, variance and moments, probability inequalities, and modes of convergence of random variables. The course will include introductory measure theory as needed. Students are expected to have previous study of both analysis and probability. This course is the first half of a yearlong sequence. The second semester's course, EN.553.721 Probability Theory II, will cover classical limit theorems, characteristic functions, and conditional expectation.
Prerequisites: Students may take EN.550.620 or EN.553.720, but not both.
Instructor(s): J. Fill.

EN.553.721. Probability Theory II. 4.0 Credits.
Probability at the level of measure theory, focusing on limit theory. Modes of convergence, Poisson convergence, three-series theorem, strong law of large numbers, continuity theorem, central limit theorem, Berry-Esséen theorem, infinitely divisible and stable laws. Recommended Course Background: EN.553.720 AND (AS.110.405 OR AS.110.415)
Instructor(s): J. Fill.

EN.553.722. Introduction to Stochastic Calculus. 3.0 Credits.
A graduate-level class on stochastic calculus, providing a rigorous introduction on stochastic integrals and differential equations.
Prerequisites: EN.550.621[C]
Instructor(s): M. Bichuch.

EN.553.723. Markov Chains. 3.0 Credits.
Recent advances in computer science, physics, and statistics have been made possible by corresponding sharply quantitative developments in the mathematical theory of Markov chains. Possible topics: rates of convergence to stationarity, eigenvalue techniques, Markov chain Monte Carlo, perfect simulation, self-organizing data structures, approximate counting and other applications to computer science, reversible chains, interacting particle systems. This course will be graded pass/fail.
Instructor(s): J. Fill.

EN.553.727. Large Deviations Theory. 3.0 Credits.
This course presents an introduction to the theory of large deviations, which provides a quantitative framework for understanding exponentially rare events. Topics encompass the development of large deviation principles in both finite and infinite-dimensional settings, from empirical measures of i.i.d samples to random perturbations of dynamical systems. Applications include problems in information theory, hypothesis testing, and transitions between steady states in biological and physical models.
Instructor(s): M. Bichuch.

EN.553.730. Statistical Theory. 4.0 Credits.
The fundamentals of mathematical statistics will be covered. Topics include: distribution theory for statistics of normal samples, exponential statistical models, the sufficiency principle, least squares estimation, maximum likelihood estimation, uniform minimum variance unbiased estimation, hypothesis testing, the Neyman-Pearson lemma, likelihood ratio procedures, the general linear model, the Gauss-Markov theorem, simultaneous inference, decision theory, Bayes and minimax procedures, chi-square methods, goodness-of-fit tests, and nonparametric and robust methods.
Prerequisites: Students may take EN.550.630 or EN.553.730, but not both.
Instructor(s): C. Priebe.
EN.553.731. Statistical Theory II. 3.0 Credits.
Advanced concepts and tools fundamental to research in mathematical statistics and statistical inference: asymptotic theory; optimality; various mathematical foundations.
Instructor(s): D. Naiman.

EN.553.732. Bayesian Statistics. 3.0 Credits.
The course will cover Bayesian methods for exploratory data analysis. The emphasis will be on applied data analysis in various disciplines. We will consider a variety of topics, including introduction to Bayesian inference, prior and posterior distribution, hierarchical models, spatial models, longitudinal models, models for categorical data and missing data, model checking and selection, computational methods by Markov Chain Monte Carlo using R or Matlab. We will also cover some nonparametric Bayesian models if time allows, such as Gaussian processes and Dirichlet processes. Prerequisite: 553.730 (recommended) or 553.630
Prerequisites: Students may take EN.550.632 or EN.553.732, but not both.
Instructor(s): Y. Xu.

EN.553.733. Advanced Topics in Bayesian Statistics. 3.0 Credits.
This course covers advanced topics in Bayesian statistical analysis beyond the introductory course. Therefore knowledge of basic Bayesian statistics is assumed (at the level of “A first course in Bayesian statistical methods”, by Peter Hoff (Springer, 2009). The models and computational methods will be introduced with emphasis on applications to real data problems. This course will cover nonparametric Bayesian models including Gaussian process, Dirichlet process (DP), Polya trees, dependent DP, Indian buffet process, etc. Recommended Course Background: EN.553.732 or permission from the instructor
Instructor(s): Y. Xu.

EN.553.734. Introduction to Nonparametric Estimation. 3.0 Credits.
This course will cover the fundamental topics in the theory of nonparametric estimation. Several different nonparametric estimators (e.g., kernel, local polynomial, projection, spline, and trigonometric) and their statistical properties will be considered. Minimax lower bounds for a variety of nonparametric estimation problems will be discussed. A number of topics related to estimator asymptotic efficiency and adaptation will be studied. An overview of shape constrained nonparametric estimation will be presented for a variety of shape constraints (e.g., monotonicity and convexity).
Prerequisites: EN.550.630
Instructor(s): T. Lebair.

EN.553.735. Topics in Statistical Pattern Recognition. 3.0 Credits.
The Dissimilarity Representation for Pattern Recognition. This course will investigate aspects of statistical inference and statistical pattern recognition associated with observing only dissimilarities between entities rather than observing feature vectors associated with the individual entities themselves.
Instructor(s): C. Priebe.

EN.553.736. System Identification and Likelihood Methods. 2.0 Credits.
The focus of this roundtable-format course will be stochastic modeling as relates to system identification and maximum likelihood. The principles and algorithms being covered in this course have tremendous importance in the world at large. For example, maximum likelihood is arguably the most popular method for parameter estimation in most real-world applications. System identification is the term used in many fields to refer to the process of mathematical model building from experimental data, with a special focus on dynamical systems. The system identification process refers to several important aspects of model building, including selection of the model form (linear or nonlinear, static or dynamic, etc.), experimental design, parameter estimation, and model validation. This course will cover topics such as the maximum likelihood formulation and theory for dynamical systems, the EM (expectation-maximization) algorithm and its variants, Fisher information, common model structures, online versus offline estimation, the role of feedback in identification (i.e., open-loop versus closed-loop estimation), standard and extended Kalman filtering, and uncertainty characterization (e.g., confidence regions).
Recommended Course Background: Undergraduate-level matrix theory and ordinary differential equations; graduate-level course in probability and statistics (e.g., 553.430 or equivalent; in particular, students should have prior exposure to maximum likelihood and Bayes’ rule). Prior experience in data analysis and algorithms will be helpful.
Instructor(s): J. Spall.

EN.553.737. Distribution-free statistics and Resampling Methods. 3.0 Credits.
Distribution-free and resampling methods address statistical estimation, testing and validation under minimal assumptions on the true distribution of observed data, avoiding, in particular, to rely on some specific parametric class (e.g., Gaussian). The course will study the following topics: order statistics, rank-based methods, tests of independence, symmetry, location differences, scale differences and goodness-of-fit, permutation tests and bootstrap with an introduction to the problem of multiple comparisons. Recommended Courses: EN.553.430 or EN.553.730 or equivalent.
Instructor(s): E. Younes.

EN.553.738. High-Dimensional Approximation, Probability, and Statistical Learning. 3.0 Credits.
The course covers fundamental mathematical ideas for certain approximation and statistical learning problems in high dimensions. We start with basic approximation theory in low-dimensions, in particular linear and nonlinear approximation by Fourier and wavelets in classical smoothness spaces, and discuss applications in imaging, inverse problems and PDE’s. We then introduce notions of complexity of function spaces, which will be important in statistical learning. We then move to basic problems in statistical learning, such as regression and density estimation. The interplay between randomness and approximation theory is introduced, as well as fundamental tools such as concentration inequalities, basic random matrix theory, and various estimators are constructed in detail, in particular multi scale estimators. At all times we consider the geometric aspects and interpretations, and will discuss concentration of measure phenomena, embedding of metric spaces, optimal transportation distances, and their applications to problems in machine learning such as manifold learning and dictionary learning for signal processing.
Instructor(s): M. Maggioni.
EN.553.739. Statistical Pattern Recognition Theory & Methods. 3.0 Credits.
This biennial course covers topics in the theory, methods, and applications of machine learning from an explicitly statistical perspective. Recommended Course Background: (EN.550.420 OR EN.553.420 OR EN.553.620) AND (EN.550.430 OR EN.553.430 OR EN.553.630)
Instructor(s): C. Pribebe.

EN.553.740. Machine Learning. 3.0 Credits.
This course will cover theoretical and practical aspects of statistical learning. We will review a collection of learning algorithms for classification and regression estimation, including linear methods, kernel methods, tree-based and boosting methods; we will also discuss unsupervised methods for linear and nonlinear data reduction and clustering. We will introduce fundamental concepts of the theory of model selection and validation: bias/variance dilemma, penalty methods, and some measures of complexity; the course will also describe standard validation algorithms, like cross-validation and bootstrap. Recommended prerequisite: 553.620 and 553.630.
Instructor(s): E. Younes.

EN.553.742. Statistical Inference on Graphs. 3.0 Credits.
This course provides an introduction to and overview of current research in random graph inference, with a particular focus on spectral methods and their applications to inference for independent-edge random graphs. Topics include concentration inequalities; analysis of matrix perturbations; spectral decompositions of graph adjacency and Laplacian matrices; consistent estimation of latent variables associated to vertices; clustering, community detection, and classification in networks; and multi-sample hypothesis testing for graphs. Emphasis will be on a framework for establishing classical properties—consistency, normality, and efficiency—for estimators of graph parameters. Students will read papers in the literature and are expected to participate actively in class. Recommended prerequisites EN.553.792 and EN.553.630.
Instructor(s): D. Athreya; M. Tang.

EN.553.743. Graphical Models. 4.0 Credits.
This course describes how models are built on networks encoding the conditional dependency structure between random variables, also called graphical models, can be used to design multivariate probability distributions. A special focus will be made on important particular cases, like Markov Chains, Bayesian networks or Markov Random Fields. We will also discuss parametric estimation and inference problems, and issues arising when some of the variables cannot be observed.
Prerequisites: EN.550.420 or equivalent AND EN.550.430 or equivalent
Instructor(s): Staff.

EN.553.746. Advanced Topics in Derivatives. 1.0 Credit.
Topics will include static arbitrage versus dynamic arbitrage, proof of Black-Scholes formula using a change of measure, the Modigliani-Miller representation of the corporation, Merton model of corporate debt valuation, Asian options’ operational use, pricing and hedging; stochastic volatility and local volatility models; elements of market microstructure and high frequency trading. Grading will be mostly based on oral presentations. The course is aimed at second year Master’s students and will not begin meetings until mid-October.
Instructor(s): H. Geman.

EN.553.749. Advanced Financial Theory. 3.0 Credits.
The first part of the course will review in depth the main instruments in the various asset classes, as well as the founding results on investment decision, capital budgeting and project financing. The second part will analyze the theory of the firm: capital structure, dilution and share repurchase, dividend policy, Modigliani- Miller theorem and will lead to the contingent claim pricing of corporate debt and equity as in Merton (1974) and its extensions. The third part will extend the CAPM to the Arbitrage Pricing Theory of Ross (1976) and its theoretical and operational consequences. The fourth part will be dedicated to the stochastic modelling of the yield curve to price caps, floors and swaptions, and their use in the Asset Liability Management of a bank and insurance company. This course will not begin until mid-October.
Prerequisites: Students may take EN.550.649 or EN.553.749, but not both.
Instructor(s): H. Geman.

EN.553.753. Commodities and Commodity Markets. 4.0 Credits.
The first half of this course will be devoted to energy markets, both in terms of the market itself and how to model peculiar features of this business. First we will discuss fossil fuels, including physical and financial natural gas and LNG; crude and refined petroleum commodities; and possibly coal markets. Then the focus will turn to electricity markets, including market structures; energy, capacity and ancillary services markets; characteristics of demand; power plant commitment and dispatch; the “stack” or market supply curve; characteristics of different plants and fuels; regional differences in markets; and hedging techniques from trading vanilla products all the way to complex multi-commodity structures. We will discuss renewable energy sources, their characteristics, economics, and effects on the larger market, as well as emissions markets as a way of removing pollution externalities. The first half will conclude by elaborating on risk management techniques; credit; legislation and regulation; and derivative accounting as time permits. The second half of the course will turn to shipping, metals and agricultural markets. The metal physical markets will be described, the major Exchanges presented (LME, SHFE), as well as the warehousing issues in the case of base metals. The case of precious metals will be singled out, and gold in particular; and finally uranium and rare earths. Agricultural (grains and softs) markets will be presented, together with the crucial issues of biofuels, fertilizers, water, and arable land. In all cases, there will be a large focus on the trading activities – both to hedge and to gain exposure to commodities – in spot and derivative markets. Numerous examples of forward curves will be provided, as well as volatility skews. The valuation of swaps, spread options and Asian options will be (re)derived. Students should have rudimentary knowledge of financial markets. Recommended Course Background: EN.553.620 and (AS.110.106 or AS.110.108)
Instructor(s): G. Schultz; H. Geman.

EN.553.761. Nonlinear Optimization I. 3.0 Credits.
This course considers algorithms for solving various nonlinear optimization problems and, in parallel, develops the supporting theory. The primary focus will be on unconstrained optimization problems. Topics for the course will include: necessary and sufficient optimality conditions; steepest descent method; Newton and quasi-Newton based line-search, trust-region, and adaptive cubic regularization methods; linear and nonlinear least-squares problems; and linear and nonlinear conjugate gradient methods. Recommended Course Background: Multivariable Calculus, Linear Algebra, Real Analysis such as AS.110.405
Prerequisites: Students may take EN.550.661 or EN.553.761, but not both.
Instructor(s): A. Basu.
EN.553.762. Nonlinear Optimization II. 3.0 Credits.
This course considers algorithms for solving various nonlinear optimization problems and, in parallel, develops the supporting theory. The primary focus will be on constrained optimization problems. Topics for the course will include: necessary and sufficient optimality conditions for constrained optimization; projected-gradient and two-phase accelerated subspace methods for bound-constrained optimization; simplex and interior-point methods for linear programming; duality theory; and penalty, augmented Lagrangian, sequential quadratic programming, and interior-point methods for general nonlinear programming. In addition, we will consider the Alternating Direction Method of Multipliers (ADMM), which is applicable to a huge range of problems including sparse inverse covariance estimation, consensus, and compressed sensing. Recommended Course Background: Multivariable Calculus, Linear Algebra, Real Analysis such as AS.110.405.
Instructor(s): D. Robinson.

EN.553.763. Stochastic Search & Optimization. 3.0 Credits.
An introduction to stochastic search and optimization, including discrete and continuous optimization problems. Topics will include the "no free lunch" theorems, beneficial effects of injected Monte Carlo randomness, algorithms for global and local optimization problems, random search, recursive least squares, stochastic approximation, simulated annealing, evolutionary and genetic algorithms, machine (reinforcement) learning, and statistical multiple comparisons. Students should have knowledge of basic matrix algebra. Recommended Course Background: Graduate course in probability and statistics.
Instructor(s): J. Spall.

EN.553.764. Modeling, Simulation, and Monte Carlo. 3.0 Credits.
Concepts and statistical techniques critical to constructing and analyzing effective simulations; emphasis on generic principles rather than specific applications. Topics include model building (bias-variance tradeoff, model selection, Fisher information), benefits and drawbacks of simulation modeling, random number generation, simulation-based optimization, discrete multiple comparisons using simulations, Markov chain Monte Carlo (MCMC), and input selection using optimal experimental design.
Instructor(s): J. Spall.

EN.553.765. Convex Optimization. 3.0 Credits.
This course presents algorithms for convex optimization along with the supporting theoretical convergence results. The chosen topics covered, which are driven by big data and machine learning applications, include convex sets and functions, gradient methods (steepest descent, line searches, rates-of-convergence for weakly and strongly convex functions, Frank-Wolfe method), accelerated methods (heavy ball, Nesterov), stochastic gradient, coordinate descent, proximal and projected gradient methods, duality theory and duality-based algorithms (augmented Lagrangian, ADMM), and Newton/quasi-newton methods. Recommended Course Background: (AS.110.201 or AS.110.212 or EN.553.291) and AS 110.405.
Instructor(s): D. Robinson.

EN.553.766. Combinatorial Optimization. 3.0 Credits.
The main goal of this course is to introduce students to combinatorial optimization techniques. The first part of the course will focus on combinatorial algorithms for classical problems. The next part of the course will show how polyhedral theory can be used to deal with combinatorial optimization problems in a unifying manner. Familiarity with linear programming and algorithms desirable but not strictly required. Recommended Course Background: Linear Algebra.
Instructor(s): A. Basu.

EN.553.769. Topics in Discrete Optimization. 3.0 Credits.
We will study solution techniques for problems in discrete optimization, emphasizing computational aspects of the theory and algorithms. Recommended Prerequisites: good backgrounds in linear programming and graph theory.
Instructor(s): W. Cook.

EN.553.770. Topics In Discrete Math. 3.0 Credits.
Topics in Discrete Mathematics: Graphons. Just as real numbers can be defined as limits of convergent sequences of rational numbers, graphons are the limits of convergent sequences of graphs. The notion of a graphon is very recent (less than a decade old) but graphons already are playing an interesting role in pure combinatorics (extremal graph problems) and in applications/algorithms for huge networks. Active participation by students is key as we work our way through challenging ideas.
Instructor(s): E. Scheinerman.

EN.553.780. Shape and Differential Geometry. 3.0 Credits.
The purpose of this class is to provide an elementary knowledge of the differential geometry of curves and surfaces, and to place this in relation with the description and characterization of 2D and 3D shapes. Intrinsic local and semi-local descriptors, like the curvature or the second fundamental form will be introduced, with an emphasis on the invariance of these features with respect to rotations, translations, etc. Extension of this point of view to other class of linear transformations will be given, as well as other types of shape descriptors, like moments or medial axes. Recommended Course Background: Calculus III and linear algebra.
Instructor(s): E. Younes
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.781. Numerical Analysis. 4.0 Credits.
Brief review of topics in elementary numerical analysis such as floating-point arithmetic, Gaussian elimination for linear equations, interpolation and approximation. Core topics to be covered: numerical linear algebra including eigenvalue and linear least-squares problems, iterative algorithms for nonlinear equations and least squares problems, and convergence theory of numerical methods. Other possible topics: sparse matrix computations, numerical solution of partial differential equations, finite element methods, and parallel algorithms.
Prerequisites: Students may take EN.550.681 or EN.553.781, but not both.
Instructor(s): M. Micheli, N. Charon.

EN.553.782. Statistical Uncertainty Quantification. 3.0 Credits.
This course introduces uncertainty quantification (UQ) on mathematical models and data, with emphasis on the use of stochastic processes and probability theory. Topics include computer experiments, designs, conditional probability, Bayesian inference, Gaussian stochastic processes, continuity, reproducing kernel Hilbert space, covariance functions, computer model emulation, parameter estimation, approximation, dynamic linear models, Kalman filter, computation, sensitivity analysis, functional ANOVA, model selection and calibration. Examples of some continuous time processes will be introduced, such as Brownian motion, Brownian bridge, O-U process, with extensions to multidimensional input space. Uncertainty analysis of mathematical models will be the focus from both theoretical and computational perspectives. Applications will concentrate on understanding and predicting the behavior of complex systems in science and engineering. Prerequisite EN.553.620 or EN.553.720 Recommended course background:
EN.553.630 or EN.553.730.
Prerequisites: Students may take EN.550.782 or EN.553.782, but not both.
Instructor(s): M. Gu.
Instructor(s): D. Audley; D. Naiman; J. Miller; M. Bichuch.

This course is open only to AMS department master's students.

Credits.

EN.553.791. Financial Mathematics Master's Summer Internship. 2.0 Credits.

Instructor(s): J. Spall.

EN.553.784. Mathematical Foundations of Computational Anatomy. 3.0 Credits.

The course will provide fundamental concepts and methods that pertain the analysis of the variation of anatomical shapes extracted from medical images. It will review basic properties of the most important shape representations (landmark, curves, surfaces, images...), describe distances and discrepancy measures that allow for their comparison, and introduce nonlinear optimal control methods that underlie the Large Deformation Diffeomorphic Metric Mapping (LDDMM) family of registration algorithms. The course will then discuss shape averaging methods and template-centered representations for the analysis of shape datasets. Recommended Course Background: Optimization (EN.553.361 or higher) and (AS.110.202 OR AS.110.211 or higher) AND AS.110.302 or higher.

Instructor(s): A. Clark.

EN.553.794. Mathematical Foundations of Computational Anatomy. 3.0 Credits.

This roundtable course is an introduction to two related areas?neural networks (NNs) and control systems based on the use of feedback. Artificial NNs are effective conceptual and computational vehicles for many important applications; feedback control is relevant to virtually all natural and human-made systems. NNs are applied in areas such as system modeling and control, function approximation, time-series filtering/prediction/smoothing, speech/image/signal processing, and pattern recognition. Topics to be covered for NNs include network architecture, learning algorithms, and applications. Specific NNs discussed include perceptrons, feedforward networks with backpropagation, and recurrent networks. This course also provides an introduction to feedback control systems, including the role of feedback in regulating systems and in achieving stability in systems. We consider stochastic (noise) effects in feedback systems. We also consider the interface of NNs and control by discussing how NNs are used in building modern control systems in problems where standard methods are infeasible. Recommended Course Background: Matrix theory, differential equations, and a graduate course in probability and statistics.

Instructor(s): J. Spall.

EN.553.791. Financial Mathematics Master's Summer Internship. 2.0 Credits.

This course is open only to AMS department master's students.

Instructor(s): D. Audley; D. Naiman; J. Miller; M. Bichuch.

EN.553.792. Matrix Analysis and Linear Algebra. 4.0 Credits.

A second course in linear algebra with emphasis on topics useful in analysis, economics, statistics, control theory, and numerical analysis. Review of linear algebra, decomposition and factorization theorems, positive definite matrices, norms and convergence, eigenvalue location theorems, variational methods, positive and nonnegative matrices, generalized inverses.

Prerequisites: Students may take EN.550.692 or EN.553.792, but not both.

Instructor(s): D. Fishkind.

EN.553.793. Turbulence Theory. 3.0 Credits.

An advanced introduction to turbulence theory for graduate students in the physical sciences, engineering and mathematics. Both intuitive understanding and exact analysis of the fluid equations will be stressed. Previous familiarity with fluid mechanics is not required, although it could be helpful.

Instructor(s): G. Eyink.

EN.553.795. Advanced Parameterization in Science and Engineering. 3.0 Credits.

This course will present an overview of topics in science-based parameterization, including dynamics, probability and other applied mathematical methods. These concepts will be presented in a unified format, with some emphasis on scientific computing. Specific topics include: basic probability, statistical dynamics, (moment hierarchies, Liouville/forward equations, path-integral methods), asymptotic closure (homogenization, Chapman-Enskog), closure techniques without any separation of scales (non-linear Galerkin & Weighted residuals, algebraic closures, PDF-based closures, down-scaling), uncertainty quantification (variance & other measures of uncertainty, Bayesian estimation, ensemble methods), hybrid methods.

Instructor(s): G. Eyink

Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.797. Introduction to Control Theory and Optimal Control. 3.0 Credits.

A control system is a dynamical system on which one can act through a parameter that can be chosen freely at any point in time. In this class, we will be interested in two main problems. The first one is controllability, which studies conditions for the existence of controls allowing an initial point to be driven to any other point. The second one is optimal control, in which we will study methods to minimize a certain cost over all possible controls, possibly with endpoint constraints. Such problems have many applications in engineering: crossing a river with minimal fuel, planning trajectories of rocket engines etc. Recommended Course Background: Multivariate Calculus, Linear Algebra, Differential Equations. Some familiarity with Optimization is recommended, but not mandatory.

Instructor(s): N. Charon.
EN.553.799. Topics In Applied Math. 3.0 Credits.
Analysis of Algorithms. This course in the probabilistic analysis of algorithms (AoFA) will be accessible to any student who has had at least one course in probability and will be most beneficial to those who have had at least one probability course at the measure-theoretic level. The course will review basic topics from the theory of probability that have proved useful in AoFA. It will provide introductions to more advanced AoFA-relevant topics chosen from such topics as: Markov chains, branching processes, urn models, Poissonization (and de-Poissonization), various metrics on distributions, fixed-point characterizations of distributions, convergence of sequences of stochastic processes, perfect simulation using Markov chains (and otherwise), and large deviation principles. The course will interweave probability theory and applications to AoFA, focusing on the fundamentally important and exceptionally rich example of limiting distributions for various ways of measuring the cost of executing the QuickSort and QuickSelect algorithms.
Instructor(s): J. Fill.

EN.553.800. Dissertation Research. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.553.801. Department Seminar. 1.0 Credit.
A variety of topics discussed by speakers from within and outside the university. Required of all resident department graduate students.
Instructor(s): T. Budavari.

EN.553.802. Graduate Independent Study. 3.0 Credits.
Instructor(s): M. Maggioni.

EN.553.810. Probability & Statistics. 1.0 - 4.0 Credits.
Instructor(s): C. Priebe.

EN.553.822. Stochastic Calculus Seminar. 2.0 Credits.
Seminar and readings in stochastic calculus.
Instructor(s): M. Bichuch.

EN.553.826. Information Theory Seminar. 3.0 Credits.
Graduate seminar covering topics in information theory and information geometry. Topics may include large deviation theory, I-divergence, Fisher information and ergodic theory. Emphasis will be placed on developing a rigorous geometric understanding of methods and models in probability and statistics. Course cannot be counted toward AMS Master's degree requirements
Prerequisites: EN.550.447 OR EN.550.630 or Permission of instructor.
Instructor(s): K. Levin.

EN.553.831. Advanced Topics in Nonparametric Bayesian Statistics. 3.0 Credits.
Will discuss advanced topics in nonparametric Bayesian statistics
Instructor(s): Y. Xu.

EN.553.832. Machine Learning Journal Course. 3.0 Credits.
Journal course on machine learning topics. Course is restricted to first and second year AMS PhD students, and others by permission of instructor.
Instructor(s): D. Naiman.

EN.553.833. Bayesian Modeling in Biomedical Applications. 3.0 Credits.
This topic course will cover Bayesian modeling in biomedical applications, especially in Electronic Health Record area. The knowledge of basic Bayesian statistics (at the level of "A first course in Bayesian statistical methods", by Peter Hoff (Springer, 2009)) and Nonparametric Bayesian statistics (e.g. Gaussian process, Dirichlet process (DP), dependent DR Indian buffet process, etc) is assumed. Students will be required to do intensive literature readings on both Bayesian modeling from statistical journals and biomedical topics from medical journals, present papers of common interests, and discuss potential research ideas for their final project.
Instructor(s): Y. Xu.

EN.553.847. Financial Mathematics Masters Seminar. 1.0 Credit.
This course is only open to students enrolled in the MSE in Financial Mathematics program. Advanced topics chosen according to the interests of the instructor and graduate students. The course will focus on recent research articles in the financial mathematics literature.
Instructor(s): D. Audley; D. Naiman; J. Miller.

EN.553.865. Optimization and Discrete Math. 1.0 - 4.0 Credits.
Discussion of new results in the specified research area based on journal articles, research monographs and current research. Each week a participant in the seminar will present a lecture. Organized by advanced graduate students with the sponsorship of an Applied Mathematics and Statistics faculty member.
Instructor(s): A. Basu; D. Robinson.

EN.553.892. Matrix Analysis II Seminar. 2.0 Credits.
Continuation of EN.553.792.
Instructor(s): N. Charon.

Cross Listed Courses

Mathematics

AS.110.795. Data Science Seminar.
Presentations of current research papers by faculty, graduate students and invited guest speakers. For graduate students only.
Instructor(s): M. Maggioni.
Area: Quantitative and Mathematical Sciences.

General Engineering

EN.500.200. Computing for Engineers and Scientists. 4.0 Credits.
This course introduces a variety of techniques for solving problems in engineering and science on a computer using MATLAB. Topics include structure and operation of a computer, the programming language MATLAB, computational mathematics, and elementary numerical analysis. Co-listed with EN.550.200.
Prerequisites: Prereqs: AS.110.107 OR AS.110.109
Instructor(s): J. Yoder; K. Hedrick; T. Lebair.
Area: Engineering, Quantitative and Mathematical Sciences.

Civil Engineering

EN.560.601. Applied Math for Engineers. 3.0 Credits.
This course presents a broad survey of the basic mathematical methods used in the solution of ordinary and partial differential equations: linear algebra, power series, Fourier series, separation of variables, integral transforms.
Instructor(s): M. Zhong.
Area: Engineering, Quantitative and Mathematical Sciences.
Biomedical Engineering
EN.580.694. Statistical Connectomics. 3.0 Credits.
This course will cover the basics of an exciting emerging field of statistical connectomics (aka, brain-graphs). It is so new, that we are going to make some of it up in this class! The first week will be introductory lectures that I give. The rest of the semester will be run like a seminar; each week will focus on a different topic. On Tuesdays we will hear about a statistical method that operates on graphs, and on Thursdays we will read about some neuroscience data upon which one could apply these techniques. The final project will consist of implementing a statistical method devised for graphs on a brain-graph problem. Recommended background: coursework in probability, linear algebra, and numerical programming (eg, R, Python, Matlab).
Instructor(s): J. Vogelstein
Area: Engineering.

Computer Science
EN.601.442. Modern Cryptography. 3.0 Credits.
Modern Cryptography includes seemingly paradoxical notions such as communicating privately without a shared secret, proving things without leaking knowledge, and computing on encrypted data. In this challenging but rewarding course we will start from the basics of private and public key cryptography and go all the way up to advanced notions such as zero-knowledge proofs, functional encryption and program obfuscation. The class will focus on rigorous proofs and require mathematical maturity. [Analysis]
Prerequisites: EN.600.271 AND (EN.553.420 or EN.553.310); Students may receive credit for only one of EN.600.442, EN.601.442, EN.601.642.
Instructor(s): A. Jain
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.642. Modern Cryptography. 3.0 Credits.
Same material as 601.442, for graduate students. Modern Cryptography includes seemingly paradoxical notions such as communicating privately without a shared secret, proving things without leaking knowledge, and computing on encrypted data. In this challenging but rewarding course we will start from the basics of private and public key cryptography and go all the way up to advanced notions such as zero-knowledge proofs, functional encryption and program obfuscation. The class will focus on rigorous proofs and require mathematical maturity. [Analysis] Required course background: EN.601.231 or EN.601.631.
Prerequisites: Students may receive credit for only one of EN.600.442, EN.601.442, EN.601.642.
Instructor(s): A. Jain
Area: Engineering, Quantitative and Mathematical Sciences.

Biomedical Engineering
www.bme.jhu.edu
The faculty and students of the Johns Hopkins Department of Biomedical Engineering, founded more than 50 years ago, are engineering the future of medicine. Consistently ranked the #1 BME program in the nation, we are pushing the boundaries of discovery and innovation, pioneering new and emerging disciplines of biomedical engineering that in turn drive our academic programs.
Biomedical engineering is an interdisciplinary endeavor, and new discoveries and technological advances require a variety of experimental and computational approaches. Our unique positioning within the Johns Hopkins Whiting School of Engineering and the Johns Hopkins School of Medicine provides students and faculty with opportunities to engage with other leading engineers, scientists, and physicians. Together, we are developing the disruptive technologies that will transform the practice of medicine and improve human health. Many of these technologies are currently used in the clinic to diagnose and treat diseases, from cardiac arrhythmias and sepsis to Alzheimer’s and cancer. Examples of Hopkins BME advances include new drug delivery methods, diagnostic imaging devices, artificial organs and orthopedic implants, prosthetic limbs, and patient-specific quantitative models of disease.

Johns Hopkins BME is training the next generation of leaders in biomedical engineering through academic programs at three levels:
1. an undergraduate program, leading to a B.S. degree
2. three master’s programs, leading to an MSE degree in biomedical engineering, with course-based or thesis-based options; an MSE in bioengineering innovation and design; or dual MSE and MS degrees from Johns Hopkins BME and Tsinghua University in Beijing, China, respectively
3. a doctoral program, leading to a Ph.D. degree

At both the undergraduate and graduate levels, we are transforming the BME educational landscape through BME 2.0, an integrative learning experience in which every student is an active participant in our discovery, innovation, and translation efforts. Supported by our personalized advising program, students at all levels will specialize in one of several cutting-edge biomedical engineering focus areas derived from our research expertise. These focus areas include:

- biomedical data science
- biomedical imaging and instrumentation
- computational medicine
- genomics and systems biology
- neuroengineering
- regenerative and immune engineering

Through project-based courses and hands-on learning experiences, our students will apply their knowledge in these areas to solve real-world clinical, design, and engineering problems. Combined with advanced research and design opportunities, these experiences ensure that our graduates are well prepared for careers in industry, medicine, or research.

Facilities
Situated on both the Homewood and School of Medicine campuses, our research and educational spaces are equipped to support a broad range of interdisciplinary discovery and innovation efforts.

At the School of Medicine campus, faculty members maintain laboratories supplied with a wide variety of equipment in the Traylor, Ross, Rangos, Miller, and Smith research buildings. This location fosters a close association with other basic biomedical science programs and provides access to the clinical environment of one of the nation’s top-ranked hospitals.

The Homewood campus is home to Clark Hall, a dedicated BME space that features research laboratories, classrooms, and conference spaces. Clark Hall also houses the BME Design Studio, a premiere workspace where students can design and develop solutions to clinical and global health challenges. To maintain close ties with clinical collaborators, the Design Studio is connected around-the-clock to similar BME student design spaces located on the School of Medicine campus. BME students at all levels, from freshman to graduate students, are able to work in our design spaces and research labs, ensuring that they can begin practicing the discipline on their very first day at Hopkins.
Additional Hopkins BME amenities include physiology teaching laboratories, microscope facilities, a microfabrication laboratory, tissue culture rooms, a fully-staffed mechanical shop, conference and seminar spaces that allow broadcasting throughout the university, and state-of-the-art 3-D printing facilities designed to support a broad range of prototyping needs.

Our faculty and students also have access to ample resources through our affiliations with several of the Johns Hopkins institutes and centers that have emerged from Hopkins BME research activities. Hotbeds for interdisciplinary scientific collaborations, these centers and institutes, all of which are directed or co-directed by Hopkins BME faculty, include the Institute for Computational Medicine, Center for Imaging Science, Carnegie Center for Surgical Innovation, Translational Tissue Engineering Center, Kavli Neuroscience Discovery Institute, Mathematical Institute for Data Science, and Center for Hearing and Balance. Hopkins BME is also home to the Center for Bioengineering Innovation and Design, which oversees our renowned graduate design program. In addition to these affiliated centers and institutes, our faculty have ongoing collaborations with scientists and physicians throughout the various Johns Hopkins divisions, including the Applied Physics Lab, School of Public Health, Krieger School of Arts and Sciences, and Carey Business School.

The profoundly interdivisional nature of Hopkins BME provides students with access to a wide range of university resources, including computing laboratories, libraries, and core facilities for microscopy, flow cytometry, sequencing and genetics, creating CRISPR/Cas9-based transgenic strains, and more. These amenities allow our students to produce the innovative technologies and groundbreaking research discoveries that result in patents, start-up companies, high-impact publications, and a better standard of health care for people across the globe.

**Undergraduate Programs**

The mission of the undergraduate programs is to provide state-of-the-art biomedical engineering education to students in order that they may continue their education in graduate, medical, and professional schools or pursue careers in industry. To this end, our responsibility is as much to the future as it is to the present. Through a strong research and educational environment, we strive to empower our students to explore and define their own frontiers as well as instill the ethical principles that will foster rewarding professional endeavors. The B.S. in Biomedical Engineering degree program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

The biomedical engineering program normally leads to the bachelor of science degree and requires at least 129 credits. The B.S. program is recommended for students who plan careers in engineering or who plan to attend graduate school in engineering. If a student wishes to take a more flexible program with less emphasis on engineering, a B.A. program is also available. Either the B.S. or the B.A. program can meet the needs of a student who plans graduate study in a nonengineering area.

The undergraduate program provides a strong foundation in mathematics, engineering, and science. It emphasizes preparation for advanced study in an area related to biomedical engineering and is broad enough to accommodate students who plan graduate work in biology, medicine, engineering, biophysics, physiology, or biomedical engineering.

Our fundamental focus is to instill a passion for learning, scientific discovery, innovation and entrepreneurial spirit, and societal impact on an extraordinary group of students who will become:

- Adept at applying their engineering and biological training to solving problems related to health and healthcare that are globally relevant and based on ethically sound principles.
- Leaders in their respective careers in biomedical engineering or interrelated areas of industry, government, academia, and clinical practice.
- Engaged in life-long learning by continuing their education in graduate or professional school or through opportunities for advanced career or professional training.

Each student plans a curriculum suited to his or her goals with the assistance of a faculty advisor. Upon completion of the B.S. in biomedical engineering, students will demonstrate the ability to:

- apply knowledge of advanced mathematics, life sciences, natural sciences, and principles of engineering to problems at the interface of engineering, biology, and medicine and mathematically model and simulate biological systems using computers.
- design and conduct experiments, as well as analyze and interpret data; formulate hypotheses for experiments, including those on living systems; devise procedures for experiments, including those on living systems; collect and validate data using appropriate equipment; display, describe, summarize, and interpret experimental results in a lab report; relate the experimental results to previous work, including the interaction between living and non-living materials and systems; and practice lab safety.
- design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability; identify a need and define the biomedical engineering problem to be solved, determine the constraints to the problem and assess the successful likelihood for different approaches, undergo the design process of creation, synthesis, and integration and evaluate success of the design to meet the desired need.
- function on multidisciplinary teams; understand team goals and complementary roles and expertise of each team member; share opinions and viewpoints with other team members; and assume and fulfill individual responsibilities within a team.
- identify, formulate, and solve engineering problems; conceptualize the engineering problem, formulate a solution to the problem, and solve problems using experimental, mathematical and/or computational tools.
- understand professional and ethical responsibility; understand the guidelines for ethical and responsible use of human subjects and data for research; understand the guidelines for ethical and responsible use of animals for research; understand professional and ethical standards in the workplace and properly reference the work of others.
- communicate effectively; synthesize, summarize, and explain technical content in a written report; and synthesize, summarize, and explain technical content in an oral presentation.
- understand the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context; understand the contributions biomedical engineers can play in academia, industry, and government; and understand how biomedical engineering solutions are of benefit inside and outside the U.S.
- recognize the need for, and gain an ability to engage in, life-long learning; use library resources, professional journals, and Internet
effectively; update technical literacy to understand contemporary issues; and recognize the need for self-assessment.

- comprehend contemporary issues; understand recent developments in biomedical engineering; understand differing viewpoints in academia, government, industry, and business; and gain the ability to search and critically evaluate scientific literature.

- use the techniques, skills, and modern engineering tools necessary for engineering practice; gain proficiency in computer simulations and mathematical analysis tools; create mathematical models; develop laboratory skills applied to living systems; and utilize data acquisition systems.

The program also encourages individual study and research and gives academic credit for them. Students are welcome to work in laboratories on the Homewood campus or at the Medical Institutions in East Baltimore.

**Bachelor of Science in Biomedical Engineering**

Students seeking the B.S. degree are encouraged to focus their studies on one of five subspecialties that incorporates traditional engineering disciplines and biomedical applications. See the Biomedical Engineering Undergraduate Advising Manual for specifics on focus areas, lists of recommended mathematics and engineering electives, limitations on credits for courses with overlapping material, and the design content of engineering courses.

**Requirements for the B.S. Degree**

(See also General Requirements for Departmental Majors (p. 7).)

The B.S. degree in biomedical engineering requires 129 credits. The courses listed below must either be taken or passed by examination for advanced credit. All courses used to satisfy degree requirements must be taken for a grade (no satisfactory/unsatisfactory grading may be counted). No more than 6 credits of engineering, science, or mathematics courses in which a grade of D was received may be counted.

**Basic Sciences (18 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.101</td>
<td>General Physics: Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td>1</td>
</tr>
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</table>

**Mathematics (20 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.311</td>
<td>Probability and Statistics for the Biological Sciences and Engineering</td>
<td>3-4</td>
</tr>
<tr>
<td>or EN.553.310</td>
<td>Probability &amp; Statistics</td>
<td></td>
</tr>
<tr>
<td>or EN.553.413</td>
<td>Applied Statistics and Data Analysis</td>
<td></td>
</tr>
</tbody>
</table>

or EN.553.430 Introduction to Statistics
or EN.553.431 Statistical Methods in Imaging
or EN.553.433 Monte Carlo Methods
or EN.560.348 Probability & Statistics in Civil Engineering

**Humanities and Social Sciences (18 credits)**

These courses should form a coherent program, relevant to the student's goals, with at least one course at the 300-level or higher. They should include:

- One course in which ethical and social issues related to technology or medicine is recommended.

At least two semesters of writing-intensive courses.

**Biomedical Core (30 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN.580.111</td>
<td>BME Modeling and Design</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.221</td>
<td>Molecules and Cells</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.241</td>
<td>Statistical Physics</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.242</td>
<td>Biological Models and Simulations</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.243</td>
<td>Linear Signals and Systems</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.244</td>
<td>Nonlinear Dynamics of Biological Systems</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.246</td>
<td>Systems and Controls</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.248</td>
<td>Systems Biology of the Cell</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.421</td>
<td>Systems Bioengineering I</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.423</td>
<td>Systems Bioengineering Lab I</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.422</td>
<td>Systems Bioengineering II</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.424</td>
<td>Systems Bioengineering Lab</td>
<td>2</td>
</tr>
</tbody>
</table>

Career Exploration in BME

**Focus Area (21 credits)**

Each student is required to complete one of six Biomedical Engineering focus areas

**Design (6 credits)**

Among the technical elective courses offered, at least 6 credits must come from an approved list of design options.

**Computer Programming**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.500.112</td>
<td>Gateway Computing</td>
<td>3</td>
</tr>
</tbody>
</table>

**Free Electives**

Students can choose from any area.

1. Students who receive credit for AP Physics I and/or Physics II will receive a waiver for the laboratory course. This will reduce the required number of credits for Basic Sciences by 1 or 2 credits. Students are still required to complete at least 129 total credits for the degree.

2. Students who take an approved math course and receive 3 credits will have a total of 19 credits. Students are still required to complete at least 129 total credits for the degree.

3. See Writing Requirement (p. 7).

4. Career Exploration in BME is a 0-credit self-identified set of career related events (lectures, panels, journal clubs, etc.) beginning in the spring semester of year one and continuing until graduation. Career Exploration is administered through a Community Blackboard site; students will be enrolled by the department.
Building on the foundation of the core curriculum, each student is required to take a cohesive sequence of advanced engineering encompassing one of six Biomedical Engineering focus areas. A student’s choice of focus area is made during the sophomore year and is based on their experience with the Biomedical Engineering Core and how they wish to apply their skill, knowledge, and passion:

**Biomedical Data Science**—The past decade has seen major advances in our ability to acquire data on human health across multiple spatio-temporal scales. This wealth of data poses challenges that have never before been confronted. At the heart of these is understanding how massive data sets are best analyzed to discover new knowledge about the function of living systems in health and disease, and how this knowledge can be harnessed to provide improved, more affordable health care.

**Biomedical Imaging and Instrumentation**—Although being distinct disciplines, experience substantial overlap and enjoy significant synergies in our department. Course-based and research opportunities span fundamental development of imaging technologies, incorporation of these technologies into instruments, and translation into the clinic. In addition to collecting anatomical data, students will learn how data analysis and computer simulations are used to generate truly functional images that allow a physician to understand an organ or tissue from the smallest scale to the systems level.

**Computational Medicine**—This is an emerging discipline devoted to the development of quantitative approaches for understanding the mechanisms, diagnosis and treatment of human disease through applications of mathematics, engineering and computational science. The core approach of CM is to develop computational models of the molecular biology, physiology, and anatomy of disease, and apply these models to improve patient care.

**Genomics and Systems Biology**—This area uses advanced mathematical and modeling approaches to understand the mechanisms of disease through analysis of large datasets. Understanding the multiple scales that make up the human body maintain health and contribute to disease. Understanding life begins at the smallest of scales requiring a detailed understanding of how molecules assemble into the molecular machines that create cells that in turn constitute the tissues and organs that make up the human body. Understanding these multi-scale interactions is a staggering challenge that requires new approaches that combine network analysis theory with new ways of visualizing and manipulating biological networks across multiple spatial and temporal scales.

**Neuroengineering**—Neuroengineering is an emerging and fast growing basic and translational research avenue within today’s biomedical and bioengineering fields. The main focus of neuroengineering is to use engineering tools to modulate central, peripheral and autonomic nervous system function. It aims at developing new engineering oriented technologies within the medical field for screening, diagnosis, prognosis, rehabilitation, repair, and regeneration. Brain computer interface, deep brain stimulation, and cell replacement therapy are exemplar disciplines developed by utilizing core engineering approaches to understand pathologies and treat patients with neurological disorders.

**Regenerative and Immune Engineering**—This area has traditionally focused on understanding and harnessing the power of stem cells in concert with developing new biomaterials to guide cell behavior and reconstruct tissues and organs ranging from bone, cartilage, liver, pancreas, skin, blood vessel, and peripheral nerve. To complement these efforts designed to meet critical health care needs, immunoengineering approaches are used not only augment regeneration, but also to treat diseases such as cancer.

Courses in a focus area must be taken for a total of 21 or more credits. At least 15 credits must come from the relevant upper-level engineering course list; a maximum of six credits from the non-upper-level engineering course list may be used. Please refer to www.bme.jhu.edu/undergraduate/resources.htm for applicable courses designed for each focus area by faculty members with research interests appropriate to the area; all faculty members are active participants in shaping the undergraduate curriculum.

At least 6 credits must come from an approved list of design options. There are many combinations of courses, programs and independent study opportunities to satisfy this requirement. This is discussed in detail in the Undergraduate Handbook. Please refer to http://www.bme.jhu.edu/undergraduate/documents/BME-Undergraduate-Handbook.pdf.

### Biomedical Data Science Focus Area - Upper-Level Engineering Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.414</td>
<td>Image Processing &amp; Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.415</td>
<td>Image Process &amp; Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.432</td>
<td>Medical Imaging Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.435</td>
<td>Digital Signal Processing</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.447</td>
<td>Information Theory</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.473</td>
<td>Magnetic Resonance in Medicine</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.410</td>
<td>Biomechanics of the Cell</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.400</td>
<td>Project in Design: Pharmacokinetics</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.409</td>
<td>Dynamic Modeling and Control</td>
<td>4</td>
</tr>
<tr>
<td>EN.540.414</td>
<td>Computational Protein Structure Prediction and Design</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.421</td>
<td>Project in Design: Pharmacodynamics</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.361</td>
<td>Introduction to Optimization</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.362</td>
<td>Introduction to Optimization II</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.371</td>
<td>Cryptology and Coding</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.391</td>
<td>Dynamical Systems</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.400</td>
<td>Mathematical Modeling and Consulting</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.413</td>
<td>Applied Statistics and Data Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.420</td>
<td>Introduction to Probability</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.426</td>
<td>Introduction to Stochastic Processes</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.430</td>
<td>Introduction to Statistics</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.431</td>
<td>Statistical Methods in Imaging</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.433</td>
<td>Monte Carlo Methods</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.436</td>
<td>Data Mining</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.450</td>
<td>Computational Molecular Medicine</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.463</td>
<td>Network Models in Operations Research</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.472</td>
<td>Graph Theory</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.492</td>
<td>Mathematical Biology</td>
<td>3</td>
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<tr>
<td>EN.553.720</td>
<td>Probability Theory I</td>
<td>4</td>
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<tr>
<td>EN.553.721</td>
<td>Probability Theory II</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.730</td>
<td>Statistical Theory</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.731</td>
<td>Statistical Theory II</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.420</td>
<td>Build-a-Genome</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.431</td>
<td>Introduction to Computational Medicine I</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.437</td>
<td>Neuro Data Design I</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.438</td>
<td>Neuro Data Design II</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.439</td>
<td>Models of the Neuron</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.445</td>
<td>Networks</td>
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EN.580.446 Physical Epigenetics 3
EN.580.447 Computational Stem Cell Biology 3
EN.580.460 Theory of Cancer 3
EN.580.468 Representations of Choice 3
EN.580.480 The Art of Data Science 3
EN.580.481 Precision Care Medicine 3
EN.580.488 Foundations of Computational Biology and Bioinformatics II 3
EN.580.491 Learning Theory 3
EN.580.492 Build-a-Genome Mentor 4
EN.580.489 Computational Personal Genomics 3
EN.580.694 Statistical Connectomics 3
EN.601.315 Databases 3
EN.601.318 Operating Systems 3
EN.601.320 Parallel Programming 3
EN.601.325 Declarative Methods 3
EN.601.350 Introduction to Genomic Research 3
EN.601.402 Digital Health and Biomedical Informatics 1
EN.601.433 Intro Algorithms 3
EN.601.434 Randomized and Big Data Algorithms 3
EN.601.443 Security & Privacy in Computing 3
EN.601.447 Computational Genomics: Sequences 3
EN.601.448 Computational Genomics: Data Analysis 3
EN.601.455 Computer Integrated Surgery I 4
EN.601.456 Computer Integrated Surgery II 3
EN.601.457 Computer Graphics 3
EN.601.461 Computer Vision 3
EN.601.463 Algorithms for Sensor-Based Robotics 3
EN.601.464 Artificial Intelligence 3
EN.601.465 Natural Language Processing 4
EN.601.466 Information Retrieval and Web Agents 3
EN.601.475 Machine Learning 3
EN.601.476 Machine Learning: Data to Models 3
EN.601.482 Machine Learning: Deep Learning 3
EN.601.485 Probabilistic Models of the Visual Cortex 3
Contact the department advising office for course additions.

**Biomedical Data Science Focus Area - 200-Level Engineering Courses**
(maximum of 3 credits from this list may count in focus area)

- EN.601.226 Data Structures 4
- EN.601.229 Computer System Fundamentals 3

**Biomedical Data Science Focus Area - Non Upper-Level Engineering Courses**
(maximum of 3 credits from this list may count in focus area)

- EN.580.112 BME Design Group 3
- EN.580.211 BME Design Group 3
- EN.580.212 BME Design Group 3
- EN.580.311 BME Design Group 3
- EN.580.312 BME Design Group 3
- EN.580.411 BME Design Group 3

**Computational Medicine Focus Area - Upper-Level Engineering Courses**

- EN.520.315 Intro. to Bio-Inspired Processing of Audio-Visual Signals 3
- EN.520.432 Medical Imaging Systems 3
- EN.520.473 Magnetic Resonance in Medicine 3
- EN.520.601 Introduction to Linear Systems Theory 3
- EN.530.343 Design and Analysis of Dynamical Systems 3
- EN.530.676 Locomotion II: Dynamics 3
- EN.540.400 Project in Design: Pharmacokinetics 3
- EN.540.421 Project in Design: Pharmacodynamics 3
- EN.540.638 Advanced Topics in Pharmacokinetics and Pharmacodynamics I 3
- EN.553.386 Scientific Computing: Differential Equations 4
- EN.553.391 Dynamical Systems 4
- EN.553.420 Introduction to Probability 4
- EN.553.426 Introduction to Stochastic Processes 4
- EN.553.430 Introduction to Statistics 4
- EN.553.436 Data Mining 4
- EN.553.450 Computational Molecular Medicine 4
- EN.580.430 Systems Pharmacology and Personalized Medicine 3
- EN.580.431 Introduction to Computational Medicine I 4
- EN.580.437 Neuro Data Design I 4
- EN.580.438 Neuro Data Design II 4
- EN.580.439 Models of the Neuron 4
- EN.580.445 Networks 3
- EN.580.446 Physical Epigenetics 3
- EN.580.447 Computational Stem Cell Biology 3
- EN.580.460 Theory of Cancer 3
- EN.580.462 Representations of Choice 3
- EN.580.468 The Art of Data Science 3
- EN.580.480 Foundations of Computational Biology and Bioinformatics II 3
- EN.580.488 Foundations of Computational Biology & Bioinformatics II 3
- EN.580.491 Learning Theory 3
- EN.580.488 Foundations of Computational Biology and Bioinformatics II 3
- EN.580.689 Computational Personal Genomics 3
- EN.580.694 Statistical Connectomics 3
- EN.601.350 Introduction to Genomic Research 3
- EN.601.447 Computational Genomics: Sequences 3
- EN.601.448 Computational Genomics: Data Analysis 3
- EN.601.452 Computational Biomedical Research 3
- EN.601.455 Computer Integrated Surgery I 4
- EN.601.456 Computer Integrated Surgery II 3
- EN.601.461 Computer Vision 3

Students may use a maximum of 3 research credits as a non-upper-level engineering course.
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<td>Machine Learning: Data to Models</td>
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<td>EN.601.482</td>
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<td>Probabilistic Models of the Visual Cortex</td>
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<td>Advanced Topics in Data-Intensive Computing</td>
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<td>EN.601.750</td>
<td>Frontiers of Sequencing Data Analysis</td>
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<td>Biomaterials I</td>
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<td>Biomaterials II: Host response and biomaterials applications</td>
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<td>Intro. to Bio-Inspired Processing of Audio-Visual Signals</td>
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<td>Image Processing &amp; Analysis</td>
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<td>Image Process &amp; Analysis II</td>
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<td>EN.520.432</td>
<td>Medical Imaging Systems</td>
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<td>EN.520.454</td>
<td>Control Systems Design</td>
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<td>EN.520.465</td>
<td>Digital Communications I</td>
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<td>Feedback Control in Biological Signaling Pathways</td>
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<td>Introduction to Fluid Mechanics</td>
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<td>EN.530.343</td>
<td>Design and Analysis of Dynamical Systems</td>
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<td>EN.530.420</td>
<td>Robot Sensors/Actuators</td>
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<td>Biofluid Mechanics</td>
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<td>Introduction to Biomechanics</td>
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<td>Experimental Methods in Biomechanics</td>
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<td>Biosolid Mechanics</td>
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<td>EN.540.304</td>
<td>Transport Phenomena II</td>
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<td>Computational Protein Structure Prediction and Design</td>
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<td>Project in Design: Pharmacodynamics</td>
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<td>Cryptology and Coding</td>
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<td>Scientific Computing: Differential Equations</td>
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<td>EN.580.445</td>
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<td>Physical Epigenetics</td>
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<td>Computational Stem Cell Biology</td>
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<td>Biomechanics of the Cell</td>
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<td>EN.580.456</td>
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<td>EN.580.457</td>
<td>Introduction to Rehabilitation Engineering: Design Lab</td>
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<td>EN.580.460</td>
<td>Theory of Cancer</td>
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<td>EN.580.466</td>
<td>Statistical Methods in Imaging</td>
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<td>EN.580.471</td>
<td>Principles of Design of BME Instrumentation</td>
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<td>Honors Instrumentation (Intersession) will count as an additional 2 credits in the focus area.</td>
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<td>Medical Imaging Systems</td>
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<td>Modern Biomedical Imaging Instrumentation and Techniques</td>
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<td>Learning Theory</td>
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<td>Build-a-Genome Mentor</td>
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<td>EN.580.625</td>
<td>Structure and Function of the Auditory and Vestibular Systems</td>
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<td>Statistical Connectomics</td>
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<td>Computational Genomics: Data Analysis</td>
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<td>Computer Integrated Surgery I</td>
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<td>EN.601.456</td>
<td>Computer Integrated Surgery II</td>
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<tr>
<td>EN.601.463</td>
<td>Algorithms for Sensor-Based Robotics</td>
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<td>Natural Language Processing</td>
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<td>Machine Learning</td>
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<td>EN.601.476</td>
<td>Machine Learning: Data to Models</td>
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<td>Machine Learning: Deep Learning</td>
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Contact the department advising office for course additions.

**Genomics and Systems Biology Focus Area - 200-Level Engineering Courses**

(maximum of 3 credits from this list may count in focus area)

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<td>EN.520.213</td>
<td>Circuits</td>
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<tr>
<td>EN.520.214</td>
<td>Signals and Systems</td>
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<td>EN.520.216</td>
<td>Introduction To VLSI</td>
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<td>EN.520.230</td>
<td>Mastering Electronics</td>
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<td>EN.530.201</td>
<td>Statics and Mechanics of Materials</td>
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<td>EN.530.215</td>
<td>Mechanics-Based Design</td>
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**Genomics and Systems Biology Focus Area - Non Upper-Level Engineering Courses**

(maximum of 3 credits from this list may count in focus area)

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<td>EN.580.112</td>
<td>BME Design Group</td>
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Students may use a maximum of 3 research credits as a non-upper-level engineering course.

**Imaging and Instrumentation Focus Area - Upper-Level Engineering Courses**

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<td>Structure Of Materials</td>
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<tr>
<td>EN.510.313</td>
<td>Mechanical Properties of Materials</td>
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<td>EN.510.314</td>
<td>Electronic Properties of Materials</td>
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<tr>
<td>EN.510.316</td>
<td>Biomaterials I</td>
<td>3</td>
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<tr>
<td>EN.510.403</td>
<td>Materials Characterization</td>
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<tr>
<td>EN.510.407</td>
<td>Biomaterials II: Host response and biomaterials applications</td>
<td>3</td>
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<tr>
<td>EN.510.422</td>
<td>Micro and Nano Structured Materials &amp; Devices</td>
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<td>EN.510.430</td>
<td>Biomaterials Lab</td>
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<tr>
<td>EN.520.315</td>
<td>Intro. to Bio-Inspired Processing of Audio-Visual Signals</td>
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<td>EN.520.349</td>
<td>Microprocessor Lab I</td>
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<td>EN.520.353</td>
<td>Control Systems</td>
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<td>EN.520.372</td>
<td>Programmable Device Lab</td>
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<td>Image Processing &amp; Analysis</td>
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<td>EN.520.432</td>
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<td>EN.520.433</td>
<td>Medical Image Analysis</td>
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<td>Digital Signal Processing</td>
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<td>Information Theory</td>
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<td>Electronics Design Lab</td>
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<td>Advanced Micro-Processor Lab</td>
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<td>Control Systems Design</td>
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<td>EN.520.483</td>
<td>Bio-Photonics Laboratory</td>
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<td>EN.520.491</td>
<td>CAD Design of Digital VLSI Systems (Juniors/Seniors)</td>
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<td>EN.520.492</td>
<td>Mixed-Mode VLSI Systems</td>
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<td>EN.520.495</td>
<td>Microfabrication Laboratory</td>
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<td>EN.520.631</td>
<td>Ultrasound and Photoacoustic Beamforming</td>
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<td>EN.520.646</td>
<td>Wavelets &amp; Filter Banks</td>
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<td>EN.520.651</td>
<td>Random Signal Analysis</td>
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<td>EN.520.673</td>
<td>Magnetic Resonance in Medicine</td>
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<td>Seminar: Medical Image Analysis</td>
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<td>Computer-Aided Design</td>
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<td>Robot Sensors/Actuators</td>
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<td>Mechatronics</td>
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<td>Introduction to Biophotonics</td>
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<td>EN.530.446</td>
<td>Experimental Methods in Biomechanics</td>
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<td>EN.530.646</td>
<td>Robot Devices, Kinematics, Dynamics, and Control</td>
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<td>Biosensing &amp; BioMEMS</td>
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<td>EN.540.403</td>
<td>Colloids and Nanoparticles</td>
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<tr>
<td>EN.540.440</td>
<td>Micro/Nanotechnology. The Science and Engineering of Small Structures</td>
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<td>EN.553.361</td>
<td>Introduction to Optimization</td>
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<td>EN.553.362</td>
<td>Introduction to Optimization II</td>
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<td>Dynamical Systems</td>
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<td>Applied Statistics and Data Analysis</td>
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<td>Introduction to Probability</td>
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<td>Introduction to Stochastic Processes</td>
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<td>EN.553.433</td>
<td>Monte Carlo Methods</td>
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<td>Graph Theory</td>
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<td>EN.553.630</td>
<td>Introduction to Statistics</td>
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<tr>
<td>EN.553.761</td>
<td>Nonlinear Optimization I</td>
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<tr>
<td>EN.553.762</td>
<td>Nonlinear Optimization II</td>
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<tr>
<td>EN.580.435</td>
<td>Applied Bioelectrical Engineering I</td>
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<tr>
<td>EN.580.436</td>
<td>Applied Bioelectrical Engineering II</td>
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<tr>
<td>EN.580.456</td>
<td>Introduction to Rehabilitation Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.457</td>
<td>Introduction to Rehabilitation Engineering: Design Lab</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.471</td>
<td>Principles of Design of BME Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.571</td>
<td>Honors Instrumentation (Intersession) will count as an additional 2 credits in the focus area.</td>
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</tr>
<tr>
<td>EN.580.479</td>
<td>X-ray Imaging and Computed Tomography</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.491</td>
<td>Learning Theory</td>
<td>3</td>
</tr>
<tr>
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<td>Credits</td>
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<tr>
<td>EN.580.493</td>
<td>Imaging Instrumentation</td>
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<tr>
<td>EN.580.678</td>
<td>Biomedical Photonics</td>
<td>4</td>
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<tr>
<td>EN.580.740</td>
<td>Surgery For Engineering</td>
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<tr>
<td>EN.601.315</td>
<td>Databases</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.454</td>
<td>Augmented Reality</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.455</td>
<td>Computer Integrated Surgery I</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.456</td>
<td>Computer Integrated Surgery II</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.457</td>
<td>Computer Graphics</td>
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</tr>
<tr>
<td>EN.601.461</td>
<td>Computer Vision</td>
<td>3</td>
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<tr>
<td>EN.601.463</td>
<td>Algorithms for Sensor-Based Robotics</td>
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<tr>
<td>EN.601.475</td>
<td>Machine Learning</td>
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<tr>
<td>EN.601.485</td>
<td>Probabilistic Models of the Visual Cortex</td>
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</table>

Contact the department advising office for course additions.

### Imaging and Instrumentation Focus Area - 200-Level Engineering Courses
(maximum of 3 credits from this list may count in focus area)

<table>
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<tr>
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<tbody>
<tr>
<td>EN.520.214</td>
<td>Signals and Systems</td>
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### Imaging and Instrumentation Focus Area - Non Upper-Level Engineering Courses
(maximum of 3 credits from this list may count in focus area)

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<td>AS.110.405</td>
<td>Real Analysis I</td>
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<tr>
<td>AS.110.443</td>
<td>Fourier Analysis</td>
<td>4</td>
</tr>
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<td>EN.580.112</td>
<td>BME Design Group</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.211</td>
<td>BME Design Group</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.212</td>
<td>BME Design Group</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.311</td>
<td>BME Design Group</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.312</td>
<td>BME Design Group</td>
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<tr>
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<tr>
<td>EN.580.412</td>
<td>BME Design Group</td>
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<tr>
<td>EN.580.580</td>
<td>Senior Design Project</td>
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<tr>
<td>EN.580.581</td>
<td>Senior Design Project</td>
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Students may use a maximum of 3 research credits as a non-upper-level engineering course.

### Neuroengineering Focus Area - Upper-Level Engineering Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>EN.520.315</td>
<td>Intro. to Bio-Inspired Processing of Audio-Visual Signals</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.349</td>
<td>Microprocessor Lab I</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.353</td>
<td>Control Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.372</td>
<td>Programmable Device Lab</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.407</td>
<td>Introduction to the Physics of Electronic Devices</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.424</td>
<td>FPGA Synthesis Lab</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.432</td>
<td>Medical Imaging Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.435</td>
<td>Digital Signal Processing</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.448</td>
<td>Electronics Design Lab</td>
<td>3</td>
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<tr>
<td>EN.520.450</td>
<td>Advanced Micro-Processor Lab</td>
<td>3</td>
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<tr>
<td>EN.520.454</td>
<td>Control Systems Design</td>
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</tr>
<tr>
<td>EN.520.465</td>
<td>Digital Communications I</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.491</td>
<td>CAD Design of Digital VLSI Systems I (Juniors/Seniors)</td>
<td>3</td>
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<tr>
<td>EN.520.492</td>
<td>Mixed-Mode VLSI Systems</td>
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<tr>
<td>EN.520.495</td>
<td>Microfabrication Laboratory</td>
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### Neuroengineering Focus Area - Non Upper-Level Engineering Courses
(maximum of 3 credits from this list may count in focus area)

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>EN.580.112</td>
<td>BME Design Group</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.211</td>
<td>BME Design Group</td>
<td>3</td>
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<tr>
<td>EN.580.212</td>
<td>BME Design Group</td>
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<tr>
<td>EN.580.311</td>
<td>BME Design Group</td>
<td>3</td>
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<tr>
<td>EN.580.312</td>
<td>BME Design Group</td>
<td>3</td>
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<tr>
<td>EN.580.411</td>
<td>BME Design Group</td>
<td>3</td>
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<td>EN.580.412</td>
<td>BME Design Group</td>
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<tr>
<td>EN.580.580</td>
<td>Senior Design Project</td>
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<td>EN.580.581</td>
<td>Senior Design Project</td>
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Students may use a maximum of 3 research credits as a non-upper-level engineering course.

Contact the department advising office for course additions.
Regenerative and Immune Engineering Focus Area - Upper-Level Engineering Courses

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.510.311</td>
<td>Structure Of Materials</td>
<td>3</td>
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<tr>
<td>EN.510.312</td>
<td>Thermodynamics/Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.313</td>
<td>Mechanical Properties of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.314</td>
<td>Electronic Properties of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.315</td>
<td>Physical Chemistry of Materials II</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.316</td>
<td>Biometricians I</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.403</td>
<td>Materials Characterization</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.407</td>
<td>Biometricians II: Host response and biometricians applications</td>
<td>3</td>
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<tr>
<td>EN.510.415</td>
<td>The Chemistry of Materials Synthesis</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.421</td>
<td>Nanoparticles</td>
<td>3</td>
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<tr>
<td>EN.510.422</td>
<td>Micro and Nano Structured Materials &amp; Devices</td>
<td>3</td>
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<tr>
<td>EN.510.426</td>
<td>Biomolecular Materials I - Soluble Proteins and Amphiphiles</td>
<td>3</td>
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<tr>
<td>EN.510.430</td>
<td>Biomaterials Lab</td>
<td>3</td>
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<tr>
<td>EN.510.435</td>
<td>Mechanical Properties of Biomaterials</td>
<td>3</td>
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<tr>
<td>EN.510.442</td>
<td>Nanomaterials Lab</td>
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<tr>
<td>EN.510.606</td>
<td>Polymer Chemistry &amp; Biology</td>
<td>3</td>
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<tr>
<td>EN.530.410</td>
<td>Biochip Mechanics</td>
<td>3</td>
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<tr>
<td>EN.530.426</td>
<td>Biofluid Mechanics</td>
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<td>EN.530.436</td>
<td>Bioinspired Science and Technology</td>
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<td>EN.530.446</td>
<td>Experimental Methods in Biomechanics</td>
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<tr>
<td>EN.530.448</td>
<td>Biosolid Mechanics</td>
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<tr>
<td>EN.540.301</td>
<td>Kinetic Processes</td>
<td>4</td>
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<tr>
<td>EN.540.303</td>
<td>Transport Phenomena I</td>
<td>3</td>
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<tr>
<td>EN.540.304</td>
<td>Transport Phenomena II</td>
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<tr>
<td>EN.540.306</td>
<td>Chemical &amp; Biomolecular Separation</td>
<td>3</td>
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<td>EN.540.400</td>
<td>Project in Design: Pharmacokinetics</td>
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<tr>
<td>EN.540.402</td>
<td>Metabolic Systems Biotechnology</td>
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<tr>
<td>EN.540.403</td>
<td>Colloids and Nanoparticles</td>
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<td>EN.540.405</td>
<td>The Design of Biomolecular Systems</td>
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<td>EN.540.414</td>
<td>Computational Protein Structure Prediction and Design</td>
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<td>EN.540.421</td>
<td>Project in Design: Pharmacodynamics</td>
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<tr>
<td>EN.540.422</td>
<td>Introduction to Polymeric Materials</td>
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<td>EN.540.428</td>
<td>Supramolecular Materials and Nanomedicine</td>
<td>3</td>
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<tr>
<td>EN.540.437</td>
<td>Application of Molecular Evolution to Biotechnology</td>
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</tr>
<tr>
<td>EN.540.440</td>
<td>Micro/Nanotechnology: The Science and Engineering of Small Structures</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.465</td>
<td>Engineering Principles of Drug Delivery</td>
<td>3</td>
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<tr>
<td>EN.540.602</td>
<td>Metabolic Systems Biotechnology</td>
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<tr>
<td>EN.553.391</td>
<td>Dynamical Systems</td>
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<tr>
<td>EN.580.418</td>
<td>Principles of Pulmonary Physiology</td>
<td>3</td>
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<tr>
<td>EN.580.420</td>
<td>Build-a-Genome</td>
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<tr>
<td>EN.580.430</td>
<td>Systems Pharmacology and Personalized Medicine</td>
<td>3</td>
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<tr>
<td>EN.580.434</td>
<td>Bioelectricity</td>
<td>3</td>
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<tr>
<td>EN.580.435</td>
<td>Applied Bioelectrical Engineering I</td>
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<tr>
<td>EN.580.436</td>
<td>Applied Bioelectrical Engineering II</td>
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<tr>
<td>EN.580.441</td>
<td>Cellular Engineering</td>
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EN.580.442 Tissue Engineering 3
EN.580.444 Biomedical Applications of Glycoengineering 3
EN.580.448 Biomechanics of the Cell 3
EN.580.451 Cell and Tissue Engineering Lab 3
or EN.580.452 Cell and Tissue Engineering Lab 3
EN.580.456 Introduction to Rehabilitation Engineering 3
EN.580.492 Build-a-Genome Mentor 4
EN.580.495 Microfabrication Lab 4
EN.580.643 Advanced Orthopaedic Tissue Engineering 3
EN.580.646 Molecular Immuoengineering 3
EN.670.619 Fundamental Physics and Chemistry of Nanomaterials 3

Contact the department advising office for course additions.

Regenerative and Immune Engineering Focus Area - Non Upper-Level Engineering Courses

(maximum of 3 credits from this list may count in focus area)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.020.303</td>
<td>Genetics</td>
<td>3</td>
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<tr>
<td>AS.020.337</td>
<td>Stem Cells &amp; the Biology of Aging &amp; Disease</td>
<td>2</td>
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<tr>
<td>AS.020.363</td>
<td>Developmental Biology</td>
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<td>AS.020.373</td>
<td>Develop Biology Lab</td>
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<td>EN.580.112</td>
<td>BME Design Group</td>
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<td>EN.580.211</td>
<td>BME Design Group</td>
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<td>EN.580.212</td>
<td>BME Design Group</td>
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<td>EN.580.311</td>
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<td>EN.580.412</td>
<td>BME Design Group</td>
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<td>EN.580.580</td>
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<tr>
<td>EN.580.581</td>
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Students may use a maximum of 3 research credits as a non-upper-level engineering course.

Approved Design Courses - 6 credits

This 2-semester sequence must be taken in its entirety.

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<tr>
<th>Course Code</th>
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<tr>
<td>EN.510.433</td>
<td>Senior Design Research</td>
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<tr>
<td>EN.510.434</td>
<td>Senior Design/Research II</td>
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This 1-semester course is augmented by taking 1 semester of 580.581 Independent Design:

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<td>Senior Design Project</td>
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</thead>
<tbody>
<tr>
<td>EN.540.400</td>
<td>Project in Design: Pharmacokinetics</td>
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<tr>
<td>EN.540.421</td>
<td>Project in Design: Pharmacodynamics</td>
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This 2-semester sequence must be taken in its entirety.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>EN.580.311</td>
<td>BME Design Group</td>
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<td>EN.580.312</td>
<td>BME Design Group</td>
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This 2-semester sequence must be taken in its entirety.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.580.411</td>
<td>BME Design Group</td>
<td>3</td>
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<tr>
<td>EN.580.412</td>
<td>BME Design Group</td>
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<tr>
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<th>Credits</th>
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<tbody>
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<td>EN.580.437</td>
<td>Neuro Data Design I</td>
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<tr>
<td>EN.580.438</td>
<td>Neuro Data Design II</td>
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This 2-semester sequence must be taken in its entirety:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.580.456</td>
<td>Introduction to Rehabilitation Engineering</td>
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<tr>
<td>EN.580.457</td>
<td>Introduction to Rehabilitation Engineering: Design Lab</td>
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This 1-semester course must be augmented by taking 1 semester of 580.571 Honors Instrumentation - offered during January Intersession:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EN.580.471</td>
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This 1-semester course must be augmented by taking 1 semester of 520.499 Independent Design:

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<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>EN.580.580</td>
<td>Senior Design Project</td>
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<tr>
<td>EN.580.581</td>
<td>Senior Design Project</td>
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</tr>
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This 2-semester sequence must be taken in its entirety:

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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.601.455</td>
<td>Computer Integrated Surgery I</td>
<td>4</td>
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<tr>
<td>EN.601.456</td>
<td>Computer Integrated Surgery II</td>
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**Basic Sciences (18 credits)**

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<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
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<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
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<tr>
<td>AS.171.102</td>
<td>General Physics:Physical Science Major II</td>
<td>4</td>
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<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
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</table>

**Mathematics (16 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
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</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
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**Computer Programming (3 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>EN.500.112</td>
<td>Gateway Computing</td>
<td>3</td>
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</table>

**Humanities and Social Sciences (24 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EN.580.111</td>
<td>BME Modeling and Design</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.221</td>
<td>Molecules and Cells</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.241</td>
<td>Statistical Physics</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.242</td>
<td>Biological Models and Simulations</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.243</td>
<td>Linear Signals and Systems</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.244</td>
<td>Nonlinear Dynamics of Biological Systems</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.245</td>
<td>Systems and Controls</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.248</td>
<td>Systems Biology of the Cell</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.421</td>
<td>Systems Bioengineering I</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.422</td>
<td>Systems Bioengineering II</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.423</td>
<td>Systems Bioengineering Lab I</td>
<td>2</td>
</tr>
<tr>
<td>EN.580.424</td>
<td>Systems Bioengineering Lab</td>
<td>2</td>
</tr>
</tbody>
</table>

**Other Electives**

At least 29 additional credits are needed to complete the 120 credit requirement for the BA degree.

Total Credits: **120**

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**Graduate Programs**

**Master of Science in Engineering**

The master’s degree program is designed for students who wish to pursue careers in research and development, or as a step toward Ph.D. or M.D./Ph.D. education. The program has two degree options: a course-based plan consisting of 30 credits (equivalent to 10 full courses to be completed in one year) and a thesis-based track that requires 30 credits plus a thesis project which is completed in a second year.

**Admission and Financial Aid**

Students with undergraduate degrees in engineering are eligible to apply. Exceptional students with degrees in basic sciences may also apply, but would normally have to take a number of courses to overcome deficiencies in their curriculum.

Students do not receive departmental financial aid. However, external financial aid is available for qualified students and partial tuition remission may be available for previous Johns Hopkins students. In addition, thesis-track students (once selected for the thesis track) may be provided with additional financial aid to facilitate the research component of their degree (each financial aid package will be negotiated on an individual basis but typically will include either (or a combination of) tuition waivers or a monthly stipend.

Applications for admission are due by the appointed deadline (usually in early January).

For more information and to apply online, go to [http://www.bme.jhu.edu/graduate/mse/apply](http://www.bme.jhu.edu/graduate/mse/apply).

**Requirements for the M.S.E. Degree**

**Course-based Degree Option**

The course-based degree option will require the completion of 30 credits (the equivalent of 10 full courses) that meet the following stipulations:

- A minimum of five graduate-level courses focused in a selected biomedical engineering sub-discipline (e.g., cell and tissue engineering, computational biology, imaging, instrumentation, or systems biology) as approved by the student’s advisor.
- Additional classes that will consist of math, science, medicine, or technology coursework related to biomedical engineering, which can also include the JHU Center for Leadership’s Professional Development Courses (e.g., 633.645, 663.650, 663.646, and 663.651).
Thesis-based Degree Option

Each student will take 30 credits at the graduate-level (the same as first year students), including one or more research/practicum courses.

Thesis track students must also complete a thesis based on a research topic requiring application of quantitative or applied engineering principles to biomedical engineering.

Master of Science in Engineering in Innovation and Design

The Center for Bioengineering Innovation and Design (CBID), housed in the Department of Biomedical Engineering, focuses on the design aspect of Biomedical Engineering. This exciting program gives students opportunities to design, develop, build, and test devices that solve some of the most pressing problems facing clinicians today.

The mission of CBID is to:

- Improve human health by developing medical devices that solve important clinical problems
- Educate a new generation of medical device engineers and fellows
- Facilitate technology transfer and industry collaboration

In the graduate program CBID students will learn to identify clinical needs and innovate a novel solution to solve that clinical problem. Working in teams, students work closely with engineering faculty and physicians throughout the medical institution to come up with device ideas, build prototypes, research intellectual property, learn about the regulatory process, write business plans, and present their designs to fellow students, faculty, and outside advisors.

Undergraduate students in BME can also become involved in medical device design by joining an undergraduate design team which works on solving clinical problems by designing innovative devices.

Incorporated in all the BME design curriculum is a focus on technology commercialization. All students, graduate and undergraduate, will interact with clinical and corporate sponsors and have experiences that promote the development of leadership, communications, and marketing skills, thus helping to ensure our graduates’ professional success.

The CBID M.S.E. is a one-year program lasting from May through the following May. Please see our website for more information on our programs: http://cbid.bme.jhu.edu.

Information can also be found here: http://www.bme.jhu.edu/graduate/masters-design/

Ph.D. in Biomedical Engineering through the School of Medicine

Biomedical Engineering has emerged as one of the most exciting interdisciplinary research fields in modern science. Biomedical engineers apply modern approaches from the experimental life sciences in conjunction with theoretical and computational methods from the disciplines of engineering, mathematics, and computer science to the solution of biomedical problems of fundamental importance. The Biomedical Engineering Graduate Program of Johns Hopkins University is designed to train engineers to work at the cutting edge of this exciting discipline.

The cornerstone of the program is our belief in the importance of in-depth training of students in life sciences, modern engineering, mathematics, computer science, and in the conduct of original research leading to the doctoral dissertation. In-depth training in life sciences is achieved in one of two ways. Typically, incoming Ph.D. students enroll in the first year basic sciences curriculum of the Johns Hopkins University School of Medicine. That is, they learn human biology with the medical students. This is a unique and intensive curriculum covering a broad range of topics including molecules and cells, human anatomy, immunology, physiology, and neuroscience. Students choosing this option typically devote their entire first academic year to these courses. This curriculum is an excellent way to build a broad and solid foundation in the life sciences. Alternatively, students may elect alternative life sciences curricula. These curricula have been carefully designed to provide training in areas of the life sciences that are appropriate to each of the program’s research areas. This option is of particular value to students who enter the program having a strong background in the life sciences. In-depth training in engineering, mathematics, and computer science is achieved through elective courses that are taken in the second year.

All students are admitted with full financial support. This covers tuition and provides a modest stipend for the duration of their Ph.D. Because the students are fully funded, they can choose to perform their dissertation in essentially any laboratory in the University (subject to the approval of the Program directors). A special program with the National Heart, Lung, and Blood Institute of the National Institute of Health (NIH) allows students to also choose from research laboratories at the NIH.

Students typically do research rotations during the summer before start of the first academic semester, during the first year (typically as they are taking medical school courses), and during the following summer year. They are expected to choose a research laboratory before the start of the second academic year.

Emphasis is placed on original research leading to the doctoral dissertation. The research is usually experimental in nature, and students are expected to learn biological experimentation techniques. Nevertheless, experiment or theory can be emphasized in the research as desired by the student.

Requirements for Admission

The School of Medicine program accepts applications for the Ph.D. program until December 1 of each year. We typically recruit students in five areas: Computational Biology, Imaging, Tissue Engineering, Neural engineering, and Molecular, Neural, and Cardiac physiology (MNCP). The program is unique in that it offers the BME student the strengths of one of the best medical schools in the world. If you wish to combine engineering with cutting edge research in medicine, this may be the program for you.

In their first year, our students have the option of taking many of the same courses as the medical students, including human anatomy, molecules and cells, and genes to society. In their second year, our students take advanced engineering courses. Therefore, students that apply to our program need not only have a strong background in engineering and mathematics, but also sufficient background in chemistry (including organic chemistry) and biology (at least two introductory courses).

The admission process is by committee. The applicant should specify which area they are interested in and write about the kind of research they are considering. The faculty in each area vote and rank the applicants. The final pool of applicants is ranked and voted on by the entire faculty.

About one third of our incoming students are international students. A short list of these students is formed by committee and the top candidates are interviewed by phone. Like all admitted students,
Biomedical Engineering

international students receive full financial aid as well as a monthly stipend. They too have the freedom to choose from any lab.

Applications should be complete when submitted. In order to be considered a complete application we must have:

- A completed online application form.
- **Official transcripts from each college or university attended**—Sealed, official transcripts or certified records of all university (undergraduate and graduate) study must be submitted. If you have attended more than one institution, transcripts from each must be included with your application.
- **Official Graduate Record Examination**—GRE/MCAT scores will be acceptable and can be arranged through the Office of Graduate Affairs (address provided below). The GRE code for applying to graduate programs at the Johns Hopkins School of Medicine is 5316.
  - The BME Ph.D. program does not rely heavily on the GRE exam in making admissions or financial aid decisions. Research experience, course grades, and recommendations carry more weight. However, because the GRE score is part of the application and does affect admissions decisions in some cases, foreign applicants who took the GRE in its electronic form, in a country where the electronic test is no longer offered, are advised to retake the exam in its paper form. Applications will be considered regardless of which form of the exam was taken.
- **Three letters of recommendation**—These letters should come from faculty members who are acquainted with you and your academic work. These letters should be sealed and comment on your aptitude and promise for independent research.
- **Personal Statement**—a typewritten statement (one page maximum) indicating the basis of your interest in graduate study and your career objectives. Included should be a discussion of any research experience you have had.

Applicants for admission must fulfill the following course prerequisites:

- one year of college level biology (may include quantitative biology or physiology)
- one semester of organic chemistry
- differential equations

If you are interested in applying and do not have the prerequisite courses, you may want to submit your application with an explanatory note indicating you have made or will make arrangements to take the prerequisites before you would matriculate, if your application is accepted. In the past, applicants have taken the prerequisites at their present schools, local community colleges, etc. Courses taken at any accredited college or university are acceptable.

Each applicant must have received a B.A. or B.S. degree or its equivalent prior to matriculation. A Masters degree is not required for admission to our program.

All written correspondence and supporting documents should be sent directly to:

The Office of Graduate Affairs
The Johns Hopkins School of Medicine
1830 E. Monument St., Suite 2-107
Baltimore, MD 21205-2196
410-614-3385 phone
410-614-3386 fax

**Financial Aid**

Fellowships for tuition and support stipends (regardless of citizenship or national origin) are available from the general funds of the university. U.S. citizens and Permanent Residents are eligible for support from training grants from the NIH. Students are encouraged to apply for individual fellowships from the National Science Foundation and for NRSA awards from the NIH. Only online applications for admission are accepted and must be received by December 1.

**Requirements for the Ph.D. Degree**

The first two years are ordinarily devoted to advanced courses in engineering science and in biomedical science. Engineering, mathematics, and other physical science courses to be taken are arranged between students and their advisors. Each student is assigned a faculty mentor during the first year. This relationship is designed to help students acclimate to the program. Eighteen credit hours of course work in engineering, mathematics, or physical sciences are required. In addition, students must complete eighteen credit hours of course work in the life sciences. Of these 36 credit hours, at least six must be at the graduate level. At least three credit hours in a course with strong engineering or mathematical theory content at the 600-level must be taken.

Summer is spent working in a biomedical laboratory to gain experience and to seek out a suitable thesis research area. By the beginning of the third year, students should start original research leading to the dissertation. Students must fulfill a modest teaching requirement during one year of their program. The remaining time is spent in thesis research. The program typically takes five to six years to complete.

The student must pass a preliminary oral examination which will be a Graduate Board examination. This is taken no later than the end of the second year. The student must then conduct original research, describe it in a dissertation, and pass a final oral examination that is a defense of the dissertation. There is a minimum residency requirement of two consecutive academic years.
Integrated M.D./Ph.D. Program

Candidates for the Ph.D. in biomedical engineering who wish to apply jointly for the M.D. degree must apply directly through the School of Medicine. Although the combined programs would normally require at least seven years to execute sequentially, the combined program can ordinarily be completed in six years, with appropriate planning. Good preparation in biology and chemistry as well as mathematics, engineering, and the physical sciences is essential. Life science graduate requirements are met by the first-year program of the School of Medicine. This program is more arduous than the Ph.D. program alone, but it may have marked advantages for students interested in clinical research and applications in hospital systems and in the delivery of health care. The catalog for the School of Medicine should be consulted for admissions requirements and procedures.

Information about applying to the combined M.D.-Ph.D. program can be found at www.hopkinsmedicine.org/mdphd/admissions (http://www.hopkinsmedicine.org/mdphd/admissions). Applications submitted for consideration of the combined degree will be reviewed by the Medical School admissions committee. If the Medical School admissions committee accepts the application, it is then passed along to the Biomedical Engineering Ph.D. Program admissions committee for review. A student applying to the combined program who wishes to be considered for the straight Ph.D. program must submit a written request to have his or her application forwarded to the Biomedical Engineering Ph.D. Program office for consideration if his or her application is not accepted by the Medical School admissions committee.

For current faculty and contact information go to http://www.bme.jhu.edu/people/completefacultylist.php

Faculty

Chair
Michael I. Miller
Bessie Massie Professor and Director: computational anatomy, medical imaging, image understanding.

Professors

Joel S. Bader
Bioinformatics, computational biology, systems biology, synthetic biology.

Kathleen E. Cullen
Multisensory integration for action and perception, neural mechanisms of motor learning, neural prosthesis and rehabilitation, computational neuroscience.

Jennifer H. Elisseeff
Morton Goldberg Professor: tissue engineering, biomaterials, cartilage regeneration.

Andrew P. Feinberg
Bloomberg Distinguished Professor: epigenetics of development and disease; stochasticity in development and cancer.

Jordan J. Green
Cellular engineering, nanobiotechnology, biomaterials, controlled drug delivery and gene delivery.

Taekjip Ha
Bloomberg Distinguished Professor: single molecule engineering and biophysics, DNA/RNA nanotechnology, cell mechanics, super-resolution microscopy.

Xingde Li
Endomicroscopy technologies, nanobiophotonics and molecular imaging, early detection (cancer, cardiovascular diseases, wound healing).

Aleksander S. Popel
Physiological flows and molecular transport, microcirculation, cell mechanics.

Steven L. Salzberg
Bloomberg Distinguished Professor: bioinformatics and computational biology.

Reza Shadmehr
Human motor control and learning in health and disease, functional imaging of the brain, human neurophysiology, computational and theoretical neuroscience.

Jeffrey H. Siewerdsen
John C. Malone Professor; BME Vice Chair Clinical and Industrial Translation: medical imaging, image-guidance, flat-panel imagers, cone-beam CT, volume imaging, MRI, image science, imaging performance, radiation therapy.

Nitish V. Thakor
Medical instrumentation, medical micro and nanotechnologies, neurological instrumentation, signal processing, and neural prostheses.

Natalia Trayanova
Murray B. Sachs Professor: computational cardiac electrophysiology and electro-mechanics, mechanisms of arrhythmogenesis and cardiac anti-arrhythmia therapies, cardiac dyssynchrony and resynchronization, development of cardiac models from imaging modalities.

Leslie Tung
Functional electro-physiology of cultured cardiac cell networks, cardiac arrhythmias, analysis of multicellular structure, stem cell-derived cardiac cells.

Rene Vidal
Herschel L. Seder Professor: computer vision (camera sensor networks, recognition of human activities, dynamic scene analysis, structure from motion), biomedical imaging (processing of high angular resolution diffusion imaging, registration and segmentation of diffusion MRI, segmentation and fiber tracking of cardiac MRI, interactive medical image segmentation), machine learning (generalized principal component analysis, manifold learning and clustering, classification of dynamical systems), signal processing (consensus on manifolds, distributed optimization, compressive sensing).

Xiaojin Wang
Neurophysiology of the auditory cortex, neural mechanisms of speech perception and learning, computational neuroscience.

Raimond L. Winslow
Raj and Neera Singh Professor of Biomedical Engineering; BME Vice Chair of Academic Programs; Director, BME Masters Program: computational cell biology, systems biology, cardiac electrophysiology.

Associate Professors

Michael A. Beer
Genomics and computational molecular biology.

Harry R. Goldberg
Assistant Dean of the School of Medicine: virtual learning systems, student learning, web-based instruction.
Biomedical Engineering

Warren L. Grayson
Tissue engineering, stem cells, bioreactors, biomaterials, orthopaedics.

Rachel Karchin
Computational molecular biology, bioinformatics, genetic variation.

Scot C. Kuo
Cell motility and mechanics, nanoscale biophysics, laser-based bioinstrumentation, advanced multiphoton and confocal microscopy.

Feilim Mac Gabhann
BME Director of Graduate Affairs: computational modeling of growth factor-receptor networks, personalized medicine, individualized medicine, experimental studies of interindividual variation, therapeutic cardiovascular remodeling, novel methods for data visualization and automated image analysis, computational models of virus-host interactions.

Sridevi Sarma
Co-Director, Institute for Computational Medicine: closed-loop deep brain stimulation, control theory, computational neuroscience and large-scale optimization.

Kevin J. Yarema
Director of the Biomedical Engineering MSE Program: metabolic glycoengineering, glycobiology, systems biology of glycosylation, carbohydrate-based cancer drug design and delivery, cellular responses to static magnetic fields.

Kechen Zhang
Theoretical neuroscience, computational neuroscience, neural computation.

Assistant Professors

Angelo Homayoun All
Spinal cord injury, stem cells, electrophysiology, imaging.

Alexis Battle
Genomics, machine learning, probabilistic methods to analyze genetic data.

Patrick Cahan
Computational biology, stem cell biology, and single cell genomics.

Vikram Chib
Decision-making, motivation, movement, neuroscience, robotics, neuroeconomics.

Nicholas J. Durr
Medical imaging, biomedical optics, endoscopy, ocular diagnostics, biomicroscopy, and medical device design.

Daniel Herzka
Cardiac magnetic resonance imaging, self-navigation, open-ended imaging, fast imaging, high resolution imaging, applications of MRI in cardiac electrophysiology, kinematic imaging, and fetal imaging.

Jamie Spangler
Structural and molecular immunology, protein engineering, therapeutic antibody discovery and design, targeted drug development.

J. Webster Stayman
Imaging physics, 3D image reconstruction, novel imaging systems, image-guided interventions and diagnostic imaging.

Winston Timp
Epigenetics, single cell analysis, single molecule biophysics, nanotechnology, systems biology, computational biology/bioinformatics.

Joshua T. Vogelstein
Big data science, connectomics, statistical neuroscience.

Youseph Yazdi
Medical instrumentation, medical device design, translation and commercialization of medical devices, biophotonics, optical spectroscopy.

Wojciech B. Zbijewski
System modeling for optimization of x-ray CT imaging chain, integration in novel reconstruction algorithms.

Professors Emeriti

Richard J. Johns
University Distinguished Service Professor: Industrial liaison.

Lawrence P. Schramm
Spinal cord injury and regeneration, neural regulation of the circulation.

Artin A. Shoukas
Systems analysis of circulatory systems, systems physiology.

Eric D. Young
Auditory neurophysiology, neural modeling, sensory processes.

Adjunct Professor

Elliot R. McVeigh
Imaging.

Adjunct Associate Professors

Xiaofeng Jia
Novel application of neuro-electrophysiology for detection and restoration of peripheral nerve and spinal cord injury, basic and clinical investigations in neurological injuries and therapeutic hypothermia of brain and spinal cord after asphyxial cardiac arrest.

Scott Paul
Rehabilitation medicine and engineering.

Joseph M. Smith
Healthcare innovations and technologies.

Adjunct Assistant Professors

Erhan Bas
Neuronal reconstruction from large scale volumes.

Manu Ben-Johny
Quantitative physiology, molecular biophysics

Ivy Dick
Ca2+ signaling mechanisms in neuronal and cardiac systems, Ca2+ channels, electrophysiology, channelopathies.

Thomas W. Gilbert
Extracellular matrix scaffold materials for development of regenerative medicine.

Research Professor

Kenneth Boheler
Cardiovascular molecular and cellular biology.

Timothy Harris
Immunotherapy, radiotherapy and the application of novel technologies and combined therapies in the management of CNS and pediatric malignancies.

Andre Levchenko
Intracellular signal transduction, cell engineering, cancer research.

Alexander A. Spector
Biosolid mechanics, cell mechanics and biophysics, membrane mechanics, mechanotransduction, molecular motors, mathematical and computational modeling.

Associate Research Professor
J. Tilak Ratnamather
Computational anatomy, biomedical imaging, numerical analysis, mathematical biology of the cochlea.

Assistant Research Professor
Soumyadippta Acharya
Director of the Master’s degree program in Bioengineering Innovation and Design: Biomedical instrumentation, medical device innovation, neuroprosthetics, brain machine interfaces, computational neuroscience.

Siamak Ardekani
Image-based (multi-detector CT and MRI) shape and motion analysis of cardiac disease using mathematical models, analysis of brain development and aging process using diffusion MRI and deformation based morphometry.

Research Associate
Grace Gang
Development of mathematical models of image quality for advanced x-ray imaging systems.

Michael Osmanski
Auditory neuroscience, perception and cortical representation of complex sounds, acoustic communication, comparative and evolutionary biology of hearing.

Niranjan Pandey
Novel therapeutics for diseases such as age-related macular degeneration, diabetic retinopathy, various types of solid tumors, and immunological diseases.

Kunal Parikh
Mucus-penetrating particles for tuberculosis.

Alejandro Sisniega-Crespo
Development of high-performance Monte Carlo simulation methods for 3D imaging, including GPU implementations for high-fidelity, high-speed x-ray scatter simulation, dose calculation, and dual-energy imaging.

Stephany Tzeng
Biomaterials for gene and drug delivery, cancer therapy, nanomedicine for cellular engineering, controlled drug release.

Qihong Wang
Micosurgery.

Scott Wu Yuan
Endoscopic OCT technologies, high resolution endoscopic imaging, and biomedical applications.

Senior Lecturers
Eileen Haase

Director of the Undergraduate Program in Biomedical Engineering; Chair of Applied Biomedical Engineering, Engineering for Professionals: Freshmen Modeling and Design, System Bioengineering Laboratory I and II, Cell and Tissue Engineering Laboratory, Molecules and Cells, BME Teaching Practicum.

Lecturers
Elizabeth A. Logsdon
Director, BME Undergraduate Affairs; Director, BME Design Studio: engineering design education, online learning.

Amir Manbachi
Medical imaging, neurosurgery, spine interventions, and medical device design.

Visiting Assistant Professor
Erika Moore
Biofunctional materials.

Joint, Secondary, Part-Time, and Visiting Appointments
Mohamad E. Allaf
Associate Professor (Urology): laparoscopic and robotic surgery.

William S. Anderson
Associate Professor (Neurological Surgery): cerebrospinal fluid disorders and movement disorders.

Muyinatu A. Lediju Bell
Assistant Professor (Electrical and Computer Engineering): ultrasonic imaging, photoacoustic imaging, coherence-based beamforming, image formation, image quality, light delivery systems, medical robotics, image-guided surgery, image-guided interventions, speckle tracking, technology development, medical device design, clinical translation.

Ronald D. Berger
Professor (Cardiology): mechanisms of sudden cardiac death, new modalities of ablation therapy, device development, signal processing.

Dan E. Berkowitz
Professor (Anesthesiology and Critical Care Medicine): molecular mechanisms of cardiovascular deconditioning in rodent models of microgravity, vasoregulatory dysfunction associated with obesity, diabetes, the role of leptin in vasoregulatory changes.

Paul A. Bottomley
Professor (Radiology): magnetic resonance imaging and spectroscopy, medical imaging.

Henry Brem
Professor (Neurosurgery): clinical treatments for brain tumor, anti-angiogenesis therapies, computer navigation systems used during surgery, brain tumor vaccines.

John A. Carrino
Associate Professor (Radiology and Radiological Science): spine imaging novel MRI techniques, health services research informatics.

Jiande Chen
Professor (Gastroenterology): electrogastrography.

Charles C. Della Santina
Professor (Otolaryngology-Head and Neck Surgery): electrical stimulation of the inner ear for restoring balance function, neurophysiology, vestibular function testing.

Andrew S. Douglas
Vice Dean for Faculty for the Whiting School of Engineering, Professor (Mechanical Engineering): nonlinear solid mechanics, soft tissue mechanics, mechanics of active materials.

Laura Ensign-Hodges
Associate Professor (Nanoscience): nanomedicine, drug delivery systems.

Andrew Ewald
Professor (Cell Biology and Oncology): cellular mechanisms and molecular regulation of epithelial morphogenesis in development and cancer.

Gene Fridman
Associate Professor (Otolaryngology-Head and Neck Surgery): novel methods and devices for neural interfacing

Paul A. Fuchs
Professor (Otolaryngology-Head and Neck Surgery): biophysics and sensory physiology of sensory hair cells and neurons on the inner ear.

Israel Gannot
Professor (Electrical and Computer Engineering): optical biopsy-optical diagnostic methods in medicine, laser tissue interaction, fibers and waveguides for medical applications, lasers and optics in medicine.

Donald Geman
Professor (Applied Mathematics and Statistics): statistical learning, visual recognition, computational genomics.

Sharon Gerecht
Professor (Chemical and Biomolecular Engineering): embryonic and adult stem cells, vascular regeneration, micro/nano fabrication, biomaterials, tissue engineering.

John Goutsias
Professor (Electrical and Computer Engineering): signal and image processing, computational systems biology, bioinformatics, modeling and analysis of complex networked systems.

Henry R. Halperin
Professor (Cardiology): cardiovascular medicine, MR compatible devices.

Justin Hanes
Professor (Ophthalmology): drug and gene delivery, biomaterials synthesis, particle transport through biological barriers.

Kalina Hristova
Professor (Materials Science and Engineering): biomolecular materials, biomembranes, biosensor development, signal transduction across biological membranes.

Chao-Wei Hwang
Assistant Professor (Cardiology): optimization of PCI and stent-based drug delivery using computational fluid dynamics, cell-based therapy for the heart and peripheral vasculature, active sensing drug delivery systems.

Pablo A. Iglesias
Professor (Electrical and Computer Engineering): computational biology, models of cellular signal transduction, directed cell motility, cell division, control systems.

Takanari Inoue
Professor (Cell Biology): directed cell migration, tumor metastasis, primary cilia, synthetic chemical biology, technology development.

David A. Kass
Professor (Cardiology): molecular pathophysiology of heart failure and hypertrophy, pathobiology of cardiac dyssynchrony and resynchronization, cardiac stress regulation by phosphodiesterase 5, nitric oxide synthase uncoupling, structure-function of sarcomeric proteins to cardiac mechanics, heart failure with preserved ejection fraction.

A. Jay Khanna
Professor (Orthopaedic Surgery): spine surgery, minimally invasive, musculoskeletal imaging, image guidance for surgery, MRI, biomechanics, clinical outcomes.

Konstantinos Konstantopoulos
Professor (Chemical and Biomolecular Engineering): cell adhesion and microfluidics, nanoscale mechanics, receptor biochemistry, quantitative modeling and functional genomics.

Alain Labrique
Associate Professor (International Health and Epidemiology): application of information and communication technologies (ICTs) to strengthen health systems in resource-limited settings.

Albert C. Lardo
Associate Professor (Cardiology): cardiovascular MRI, cardiovascular CT, image guided therapy.

Rong Li
Bloomberg Distinguished Professor (Cell Biology): cellular dynamics in space, time, and adaptation.

Hanzhang Lu
Associate Professor (Radiology): development of novel MRI technologies and applications for the measurement of vital physiological and biophysical parameters.

Hai-Quan Mao
Professor (Materials Science and Engineering): nanomaterials, electrospinning, nanofibers, biomimetic matrix, stem cell expansion and differentiation, nerve regeneration, micellar nanoparticle, therapeutic delivery, biodegradable polymers.

Wayne Mitzner
Professor (Environmental Health Sciences, Program in Respiratory Biology and Lung Disease): modeling lung function, lung structure-function interactions, mechanical aspects of lung disease.

Hien Nguyen
Assistant Professor (Surgery): clinical outcomes in hernia surgery, critical care medicine, bariatric surgery and metabolic syndrome.

Devin O'Brien-Coon
Assistant Professor (Plastic and Reconstructive Surgery): tissue engineering, regenerative medicine, materials science for customized surgical applications, clinical outcomes and novel techniques in gender surgery, analysis of disparities in transgender healthcare.

Arvind P. Pathak
Associate Professor (Radiology): functional and molecular imaging, systems biology, tumor microenvironment, multiscale imaging, computational and visualization tools.

Martin Pomper
Professor (Radiology): techniques and agents to study human disease through imaging.

Jerry L. Prince
Professor (Electrical and Computer Engineering): image processing and computer vision with application to medical imaging.

Lewis H. Romer
Professor (Anesthesiology and Critical Care Medicine, Cell Biology, and Pediatrics, and the Center for Cell Dynamics): tissue engineering the micro-vasculature, extracellular matrix as an instructive environment, biophysics and biochemistry of matrix assembly, interactions between tyrosine kinases and Rho family GTPases in cell matrix adhesion, mechanochemical coupling in cell-matrix adhesion signaling, harnessing stem and progenitor cells for microvascular restitution.

Lakshmi Santhanam
Assistant Professor (Anesthesiology and Critical Care Medicine): molecular mechanisms of vascular stiffness.

Akira Sawa
Professor (Psychiatry and Behavioral Sciences): pathogenesis of mental illnesses, especially schizophrenia and mood disorders, at the molecular level.

Lew Schon
Associate Professor (Orthopaedic Surgery): surgical delivery systems for stem cells and bioactive molecules.

Ken Katsuyuki Taguchi
Associate Professor (Radiology): computed tomography (CT) image science, 3-D and 4-D image reconstruction, CT data acquisition, photon counting and spectral CT.

Nicholas Theordore
Professor (Neurosurgery and Orthopedics): brain and spinal cord injury, minimally invasive spine surgeries, robotics.

Benjamin M.W. Tsui
Professor (Radiology): molecular imaging including SPECT, PET and CT, anatomical and physiological models of humans and small animals, simulation of imaging systems and processes, quantitative image reconstruction methods, image quality assessment.

Jeff Tza-Huei Wang
Professor (Mechanical Engineering): bioMEMS and microfluidics, single molecule manipulation and detection, nano/micro scale fabrication, conformational dynamics of biomolecules.

Clifford R. Weiss
Associate Professor (Radiology and Surgery): Clinical Director of the Johns Hopkins Center for Bioengineering, Innovation and Design (CBID).

Thomas B. Wooff
Professor (Physiology): molecular dynamics calculations, membrane biophysics, computational neurosciences.

Laurent Younes
Professor (Applied Mathematics and Statistics): statistical properties of Markov random fields, image analysis, deformation analysis-shape recognition.

Elias Zerhouni
Professor (Radiology): imaging.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

EN.530.627. Intermediate Fluid Mechanics (graduate). 3.0 Credits.
Instructor(s): G. Tryggvason.

EN.540.691. Chemical Engineering Modeling and Design for Graduate Students. 3.0 Credits.
This course guides student through the open-ended problems in product and process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the creation of new products to fulfill a societal need. Process design concerns the quantitative description of processes which serve to produce chemically-derived materials and the estimation of process profitability. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the principles of unit operations and design. Students report weekly both orally and in writing on their accomplishments. Some projects are single semester, but others can be multi-semester. Students can start in any semester and can work on projects for as many semesters as they want.
Instructor(s): M. Donohue.

EN.580.105. Basic Intellectual Property Law for Scientists and Engineers: Patents, Copyrights and Trademarks. 3.0 Credits.
The course will outline the basics of intellectual property laws with an emphasis on practical aspects of protection of IP for scientists and engineers. Most of the course will cover the basics of patent law, but introductions will also be given to trademarks and copyrights. Specific problems in the areas of biotechnology, computer science and the Internet will also be highlighted. It is hoped that the attendees will obtain a basic understanding of how intellectual property is protected. No prior legal background is required.
Instructor(s): J. Szipl
Area: Social and Behavioral Sciences.

EN.580.111. BME Modeling and Design. 2.0 Credits.
Working in teams with upperclassmen this course (1) introduces biomedical engineering freshmen to an orderly method for analyzing and modeling biological systems and (2) introduces engineering principles to solve design problems that are biological, physiological, and/or medical. Freshmen are expected to use the informational content being taught in calculus, physics and chemistry and to apply this knowledge to the solution of practical problems encountered in biomedical engineering. BME Freshmen only.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): E. Haase; E. Logsdon; P. Boyle
Area: Engineering, Natural Sciences.

EN.580.112. BME Design Group. 3.0 Credits.
A two-semester course sequence where freshmen work with groups of BME upperclassmen mentors, and learn to use engineering principles to solve design problems that are biological, physiological, and/or medical. Freshmen are expected to use the informational content being taught in calculus, physics, and chemistry and apply this knowledge to the solution of practical problems encountered in biomedical engineering.
Instructor(s): A. Manbachi; E. Logsdon; N. Durr; R. Allen
Area: Engineering, Natural Sciences.
EN.580.117. Introductory Lab Skills. 1.0 Credit.
This course aims to familiarize first-year undergraduates with the basic lab skills necessary to work in a wet-lab. Specific skills covered will include pipetting, microscopy, PCR, gel electrophoresis, basic cell culture, simple microfluidics, and more! This hands-on experience will fully immerse students in the basics of laboratory research and should help prepare students looking for research or internship opportunities in the upcoming spring or summer semester.
Instructor(s): E. Haase
Area: Engineering, Natural Sciences.

This course is an introduction to scientific programming and computing designed for first-year students. The aim is to develop core computer skills required to succeed in research. Programming projects are drawn from current biomedical applications within BME. Emphasis is on algorithm development, large scale data analysis, and effective visualization of results, using MATLAB, Python, and R. Prior programming experience is not required.
Instructor(s): W. Timp
Area: Engineering.

EN.580.202. Bme In The Real World. 1.0 Credit.
Open only to engineering students; A series of weekly lectures to inform students about careers in biomedical engineering and to discuss technological, social, ethical, legal, and economic issues relevant to the profession. Topics include academic careers in biomedical engineering; biomedical engineering in industry (large corporations to sole entrepreneurship); health care delivery; ethical issues; legal issues (patenting, licensing, product liability); standards and government regulations; and economic issues in biomedical engineering industry (start-up companies, global businesses).
Instructor(s): A. Popel.
Area: Engineering.

EN.580.211. BME Design Group. 3.0 Credits.
Sophomore-level version of EN.580.311-312 or Perm. Req’d
Instructor(s): A. Manbachi; E. Logsdon; N. Durr
Area: Engineering, Natural Sciences.

EN.580.212. BME Design Group. 3.0 Credits.
Sophomore-level version of EN.580.111-112. Permission of course directors required.
Instructor(s): A. Manbachi; E. Logsdon; N. Durr; R. Allen
Area: Engineering, Natural Sciences.

EN.580.220. he Science of Medicine: Thinking Critically. 3.0 Credits.
This course investigates some of the most pressing issues in biomedical science with direction from leading clinicians, scientists, policy experts, and industry professionals. The underlying science and ethical implications for topics such as “Rogue Clinics and Designer Babies: How can I decide the genotype of my offspring – and should I;” “Mosquito-borne Diseases: Fighting an enemy that outnumbers us 15,000 to one with genetics;” and “HIV. Pushing for a cure versus settling for a treatment: What makes healthcare sufficient” are explored. The class is taught in a flipped method: students will be expected to listen to presentations at home so that class time can be devoted to problem solving activities, experimental design, debates, and discussion. The goal of this course is to teach students how to think critically and to expose students to the great unknowns that remain in science today.
Instructor(s): C. Hanlon; E. Haase; H. Goldberg
Area: Natural Sciences.

EN.580.221. Molecules and Cells. 4.0 Credits.
An introduction to modern molecular and cellular biology in the context of potential biomedical engineering applications. Topics covered: reactions between molecules, including receptor-ligand and antigen-antibody specificity, protein structure, enzyme catalysis, genetic information, protein processing and secretion, cell physiology and cell functions. Along with detailed study of molecular pathways and cellular behavior, we will discuss the quantitative study of molecular and cellular biology.
Recommended Course Background: AS.030.101 and AS.030.104
Instructor(s): E. Haase; F. Macgabhann; K. Yarem
Area: Natural Sciences.

EN.580.222. Systems and Controls. 4.0 Credits.
An introduction to linear systems: analysis, stability and control. Topics include first and second order systems, linear time invariant discrete and continuous systems, convolution, Fourier series, Fourier transforms, Laplace transforms, stability of linear systems, input output and state space representation of linear systems, stability, observability, controlability, and PID controller design. Recommended Course Background: AS.171.102 and AS.110.201, AS.110.302 or EN.553.291
Instructor(s): M. Miller; S. Sarma
Area: Engineering.

EN.580.223. Models and Simulations. 4.0 Credits.
This course introduces students to modeling and analysis of biological systems. The first portion of the course focuses on linear systems. Topics include harmonic oscillators, pharmacokinetics, reaction-diffusion equation, heat transfer, and fluid flow. The second half of the course focuses on non-linear systems. Topics include iterated maps, bifurcations, chaos, stability of autonomous systems, the Hodgkin-Huxley model, bistability, limit cycles, and the Poincare-Bendixson theorem.
The course also introduces students to the Matlab programming language, which allows them to implement the models discussed in class. Recommended Course Background: AS.110.201, AS.110.302, or EN.553.291
Instructor(s): A. Popel; M. Beer
Area: Engineering.

EN.580.230. Introduction to Genomic Data Analysis. 2.0 Credits.
This class will provide an introduction to analysis of genomic data, with a focus on practical applications and research appropriate for students with no experience. It will include directed readings, discussion, and hands-on experience in genomic research projects. Permission of instructor.
Instructor(s): A. Battle
Area: Engineering.

EN.580.237. Neuro Data Design I. 3.0 Credits.
In this year long course, students will work together in small teams to design, develop, and deploy a functioning tool for practicing brain scientists, either for accelerating research or augmenting the clinic. The first semester will focus on scoping the tool, including determining feasibility (for us in a year) and significance (for the targeted brain science community), as well as a statement of work specifying deliverables and milestones. The second semester will focus on developing the tool, getting regular feedback, and iterating, using the agile/lean development process. This version of Neuro Data Design is designed for students with less coding experience who wish to develop their writing skills.
Instructor(s): J. Vogelstein
Area: Engineering
Writing Intensive.
EN.553.291. Linear Algebra and Differential Equations. and PID controller design. Recommended course background: systems. topics include LaPlace transforms, input output and state space
An introduction to the analysis and synthesis of controllers for linear
EN.580.246. Systems and Controls. 2.0 Credits.
EN.580.248. Systems Biology of the Cell. 2.0 Credits.
Cellular systems biology provides a theoretical and quantitative understanding of the interactions between DNA, RNA, and proteins that create the well-regulated system we call life. This course develops first-principles models for the central dogma of molecular biology: information flow through protein signal transduction pathways, gene regulation by protein-DNA physical interactions, transcription of DNA to RNA, translation of RNA to protein, and feedback regulation that closes the cycle. Topics include complex analysis and contour integrals, spectral transforms, linear models for cell signaling, positive and negative feedback, non-linearities introduced by saturation and cooperativity, information content and combinatorial regulation, and instabilities leading to cell fate specification. Recommended Course Background: Linear Algebra, Systems and Controls and programming.
Instructor(s): J. Bader
Area: Engineering, Natural Sciences.
EN.580.256. Rehabilitation Engineering Seminar. 3.0 Credits.
The primary objective of this course is to introduce students to the challenges of engineering solutions for persons functioning with disabilities. In order to achieve this goal, other objectives include: gaining a basic appreciation of the modalities used to treat impairments, the opportunities for application of engineering to improve treatment delivery, understanding the science and engineering applied to helping persons with disabilities function in the everyday world and an basic knowledge of the legal, ethical issues and employment opportunities in rehabilitation engineering. Students must attend at least 70% of lectures to receive a satisfactory (S) grade.
Instructor(s): S. Paul
EN.580.302. Careers in Biomedical Engineering. 1.0 Credit.
This course is designed for upperclassmen that wish to meet with weekly speakers to discuss careers issues. A series of weekly lectures to inform students about careers in biomedical engineering and to discuss technological, social, ethical, legal, and economic issues relevant to the profession. Topics include academic careers in biomedical engineering; biomedical engineering in industry (large corporations to sole entrepreneurship); health care delivery; ethical issues; legal issues (patenting, licensing, product liability); standards and government regulations; and economic issues in biomedical engineering industry (start-up companies, global businesses). Junior/Senior Engineers only. Instructor(s): A. Popel
EN.580.311. BME Design Group. 3.0 Credits.
A two-semester course sequence where juniors and seniors work with a team leader and a group of BME freshmen and sophomores, to solve open-ended problems in biomedical engineering. Upperclassmen are expected to apply their general knowledge and experience, and their knowledge in their concentration area, to teach lower classmen and to generate the solution to practical problems encountered in biomedical engineering. Students must attend at least 70% of lectures to receive a satisfactory (S) grade.
Instructor(s): A. Manbachi, E. Logsdon; N. Durr; R. Allen
Area: Engineering, Natural Sciences.
EN.580.312. BME Design Group. 3.0 Credits.
A two-semester course sequence where juniors and seniors work with a team leader and a group of BME freshmen and sophomores, to solve open-ended problems in biomedical engineering. Upperclassmen are expected to apply their general knowledge and experience, and their knowledge in their concentration area, to teach lower classmen and to generate the solution to practical problems encountered in biomedical engineering.
Instructor(s): A. Manbachi; E. Logsdon; N. Durr; R. Allen
Area: Engineering, Natural Sciences.
EN.580.321. Statistical Mechanics and Thermodynamics. 4.0 Credits.
Basic principles of statistical physics and thermodynamics with application to biological systems. Topics include fundamental principles of thermodynamics, chemical equilibrium and thermodynamics of reactions in solutions, and elementary statistical mechanics.
Recommended Course Background: AS.110.108-AS.110.109, AS.030.101-AS.030.102, AS.171.101-AS.171.102; Freshman/Sophomore Chemistry and Physics
Instructor(s): M. Beer
Area: Engineering, Natural Sciences.

EN.580.407. Design Team Clinical Immersion. 1.0 Credit.
In this course design team leaders will undergo training in clinical need identification through clinical immersion in the Johns Hopkins Hospital System. Leaders will learn observation techniques, survey methods, mind-mapping and root-cause analysis. Dates: Tues 1/17- Friday 1/20, Monday 1/23 - Friday 1/27 The schedule for this class will change with clinical practice but will generally fall within the hours of 6am - 6pm.
Instructor(s): E. Logsdon; N. Durr.

EN.580.408. Design Team Leader Seminar. 1.0 Credit.
This course prepares undergraduate students to lead teams for the subsequent Design Teams course. This course will teach leadership skills, expose students to project options and clinical sponsors, and prepare them to plan and execute a biomedical design project. Course will meet in the Clark Hall Design Studio and the Carnegie Building (SoM) Design Studio.
Instructor(s): E. Logsdon; N. Durr.

EN.580.410. Effective Teaching and Management of Engineering Teams. 2.0 Credits.
Senior biomedical engineering students will assist the core course instructors and PhD students in managing the sections and recitations and or lab component of a course. Permission required.
Instructor(s): E. Haase.

EN.580.411. BME Design Group. 3.0 Credits.
Perm. Req’d. Senior-level version of EN.580.311-312.
Instructor(s): A. Manbachi; E. Logsdon; N. Durr; R. Allen
Area: Engineering.

EN.580.412. BME Design Group. 3.0 Credits.
Senior-level version of EN.580.311-312. Permission of course directors required.
Instructor(s): A. Manbachi; E. Logsdon; N. Durr; R. Allen
Area: Engineering.

EN.580.413. Design Team, Team Leader Seminar. 1.0 Credit.
This course is for Design Team leaders actively leading a team for the academic year. This course focuses on development of leadership, communication and team management skills in the context of biodesign.
Instructor(s): A. Manbachi; E. Logsdon; N. Durr
Area: Engineering.

EN.580.414. Design Team, Team Leader Seminar. 1.0 Credit.
This course is for Design Team leaders actively leading a team for the academic year. This course focuses on development of leadership, communication and team management skills in the context of biodesign.
Instructor(s): A. Manbachi; E. Logsdon; N. Durr; R. Allen
Area: Engineering.

EN.580.415. Ethics of Biomedical Engineering Innovation. 3.0 Credits.
Engineers confront problems and make decisions that hold long term social consequences for individuals, organizations, communities and the profession. For biomedical engineers, these decisions may relate to: inventions such as medical devices and pharmaceuticals; neural prosthetics and synthetic biological organisms; responsible and sustainable design; availability of biotechnology in the developing world. Using a combination of cases, fieldwork and readings, we examine the ethical issues, standards, theory and consequences of recent and emerging engineering interventions as a way to understand the profession and to form a basis for future decisions. In addition students will learn and practice multiple forms of communication, including oral, visual and written rhetoric. A particular focus will be communication targeted to different stakeholders including other professionals and the public. Students will apply good communication principle to the discussion of biomedical engineering ethics, develop their own ethical case studies and participate in group projects to aid ethical decision-making, and to improve communication of complex biomedical ethical issues to others.
Instructor(s): F. Macgabhann
Area: Social and Behavioral Sciences Writing Intensive.

EN.580.416. BME Advanced Teaching Practicum. 3.0 Credits.
Senior biomedical engineering students will assist the core course instructors in managing the sections, recitations, or lab component of a course. Permission required.
Instructor(s): E. Haase.

EN.580.418. Principles of Pulmonary Physiology. 3.0 Credits.
This course will provide students with an introduction to concepts in the structure and function of the respiratory system. Topics to be covered will include basic anatomy, lung mechanics, gas exchange, tests of pulmonary function and cardiopulmonary exercise, and the effects of disease on aspects of the respiratory system. Class sessions will mix both lecture and hands-on measurement, and will include discussion of instrumentation used in pulmonary measurements and a field trip to a clinical physiology laboratory at JHH. Recommended background: Chemistry, Physics, and Calculus II, and EN.580.222 Systems and Controls or equivalent.
Instructor(s): D. Shade
Area: Engineering, Natural Sciences.
EN.580.420. Build-a-Genome. 4.0 Credits.
Must understand fundamentals of DNA structure, DNA electrophoresis and analysis, Polymerase Chain Reaction (PCR) and must be either a) Experienced with molecular biology lab work or b) Adept at programming with a biological twist. In this combination lecture/laboratory "Synthetic Biology" course students will learn how to make DNA building blocks used in an int'l. project to build the world's first synthetic eukaryotic genome, Saccharomyces cerevisiae v. 2.0. Please study the wiki www.syntheticyeast.org for more details about the project. Following a biotechnology boot-camp, students will have 24/7 access to computational and wet-lab resources and will be expected to spend 15-20 hours per week on this course. Advanced students will be expected to contribute to the computational and biotech infrastructure. Successful completion of this course provides 3 credit hours toward the supervised research requirement for Molecular and Cellular Biology majors, or 2 credit hours toward the upper level elective requirement for Biology or Molecular and Cellular Biology majors.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. Bader; K. Zeller
Area: Engineering, Natural Sciences.

EN.580.421. Systems Bioengineering I. 4.0 Credits.
A quantitative, model-oriented investigation of the cardiovascular system. Topics are organized in three segments. (1) Molecular/cellular physiology, including electrical signaling and muscle contraction. (2) Systems cardiovascular physiology, emphasizing circuit-diagram analysis of hemodynamics. (3) Cardio-vascular horizons and challenges for biomedical engineers, including heart failure and its investigation/treatment by computer simulation, by gene-array analysis, by stem-cell technology, and by mechanical devices (left-ventricular assist and total-heart replacement). Recommended Course Background: EN.580.221 and EN.580.222
Instructor(s): N. Trayanova; R. Vidal
Area: Engineering, Natural Sciences.

EN.580.422. Systems Bioengineering II. 4.0 Credits.
A quantitative, model-oriented approach to the study of the nervous system. Topics include functional anatomy of the central and autonomic nervous systems, neurons and networks, learning and memory, structure and function of the auditory and visual systems, motor systems, and neuro-engineering. Recommended Course Background: EN.580.221, EN.580.222, EN.580.223, AS.110.302, EN.580.421; Corequisite: EN.580.424
Instructor(s): E. Haase; X. Wang
Area: Engineering, Natural Sciences.

EN.580.423. Systems Bioengineering Lab I. 2.0 Credits.
A two-semester laboratory course in which various physiological preparations are used as examples of problems of applying technology in biological systems. The emphasis in this course is on the design of experimental measurements and on physical models of biological systems. Priority to Junior BME majors. Recommended Corequisite: EN.580.421.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): B. Bejar Haro; E. Haase
Area: Natural Sciences.

EN.580.424. Systems Bioengineering Lab. 2.0 Credits.
A laboratory course in which various physiological preparations are used as examples of problems of applying technology in biological systems. The emphasis in this course is on the design of experimental measurements and on physical models of biological systems. Recommended Corequisite: EN.580.422
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): E. Haase.

EN.580.425. Ion Channels in Excitable Membranes. 3.0 Credits.
Ion channels are key signaling molecules that support electrical communication throughout the body. As such, these channels are a central focus of biomedical engineering as it relates to neuroscience, computational biology, biophysics, and drug discovery. The course introduces the engineering and molecular strategies used to understand the function of ionic channels. The course also surveys key papers that paint the current picture of how ion channels open and conduct ions. Biological implications of these properties are emphasized throughout. Finally, the course introduces how optical and electrophysiological methods now promise to revolutionize understanding of ionic channels. This course can be seen as a valuable partner of Models of the Neuron (EN.580.439). Recommended Course Background: EN.580.421 and EN.580.422 or equivalent, AS.110.201, AS.110.302
Area: Engineering, Natural Sciences.

EN.580.429. Systems Bioengineering III. 4.0 Credits.
Computational and theoretical systems biology at the cellular and molecular level. Topics include organizational patterns of biological networks; analysis of metabolic networks, gene regulatory networks, and signal transduction networks; inference of pathway structure; and behavior of cellular and molecular circuits. Recommended Course Background: EN.580.221 and EN.580.222 or Permission Required.
Instructor(s): J. Bader
Area: Engineering, Natural Sciences.
EN.580.430. Systems Pharmacology and Personalized Medicine. 3.0 Credits.
We have moved beyond the ‘one-size-fits-all’ era of medicine. Individuals are different, their diseases are different, and their responses to drugs are different too. This variability is not just from person to person; heterogeneity is observed even between tumors within the same person, and between sites within the same tumor. These levels of variability among the human population must be accounted for to improve patient outcomes and the efficiency of clinical trials. Some of the ways in which this is being explored include: drugs are being developed hand-in-hand with the tests needed to determine whether or not they will be effective; tumor fragments excised from patients are being cultured in the lab for high-throughput testing of drugs and drug combinations; data-rich assays such as genomics and proteomics identify thousands of potentially significant differences between individuals; and computational models are being used to predict which therapies will work for which patients. This course will focus on the applications of pharmacokinetics and pharmacodynamics to simulating the effects of various drugs across a heterogeneous population of diseased individuals. Such computational approaches are needed to harness and leverage the vast amounts of data and provide insight into the key differences that determine drug responsiveness. These approaches can also explore the temporal dynamics of disease and treatment, and enable the modification of treatment during recovery.
Recommended background: 110.201 Linear Algebra, 110.302 Differential Equations, and 553.311 Probability and Statistics (or equivalent).
Instructor(s): F. Macgabhann
Area: Engineering.

EN.580.431. Introduction to Computational Medicine I. 4.0 Credits.
Computational medicine is an emerging discipline in which computer models of disease are developed, constrained using data measured from individual patients, and then applied to deliver precision health care. Introduction to Computational Medicine I is the first in a sequence of two courses on computational medicine. It covers the core concepts of computational physiological medicine and computational anatomy. The first half of this course will cover computational physiological medicine. Students will learn how to: use biophysical laws and data to formulate computational models of physiological systems in health and disease; analyze the behaviors of these models using analytical and simulation approaches; apply models to understand their use in diagnosing and treating disease. The second half of this course will cover computational anatomy. Students will learn how to: model anatomies using magnetic resonance imaging data; compare anatomies via mappings onto anatomical atlases; discover anatomical biomarkers of disease; analyze changes in the connectivity of anatomies in disease. Class time will emphasize hands-on learning through data analysis, software development, and simulation. All instructional materials will be made available at the beginning of the course. Recommended Course Background: C++, Matlab or Python.
Prerequisites: (AS.110.107 OR AS.110.109 OR AS.110.113) AND (EN.553.310 OR EN.553.311 OR EN.553.420 OR EN.553.430)
Instructor(s): M. Miller; R. Winslow.

EN.580.434. Bioelectricity. 3.0 Credits.
This course has been revised to include numerous examples of bioelectrically active tissues and organs, complemented by relevant engineering principles. Topics include bioelectric currents and potentials, measurements of biological electric fields, wound repair in skin and epithelia, early history of bioelectricity, volume conductor theory, cardiac electrogram and lead theory, electromanipulation of cells, galvanotaxis, stem cell development, bone repair, and neuronal growth. Recommended Prereqs: EN.580.421 and EN.580.422.
Instructor(s): L. Tung
Area: Engineering.

EN.580.435. Applied Bioelectrical Engineering I. 1.5 Credits.
The course is offered in two parts, each a half semester long (1.5 credits each). EN.580.435 explores diverse applications of bioelectrical measurements and manipulation in modern engineering practice. Topics include functional electrical stimulation, deep brain stimulation, cardiac pacing and defibrillation, tissue ablation and cancer treatment. The second part of the course, EN.580.436, is optional and will consist of a lab project involving the physical manipulation of cells, mentored by the instructors and carried out by the entire class. Recommended Course Background: EN.580.421 and EN.580.422.
Instructor(s): D. Hunter; L. Tung
Area: Engineering.

EN.580.436. Applied Bioelectrical Engineering II. 1.5 Credits.
The course is offered in two parts, each a half semester long (1.5 credits each). EN.580.435 explores diverse applications of bioelectrical measurements and manipulation in modern engineering practice. Topics include functional electrical stimulation, deep brain stimulation, cardiac pacing and defibrillation, tissue ablation and cancer treatment. The second part of the course, EN.580.436, is optional and will consist of a lab project involving the physical manipulation of cells, mentored by the instructors and carried out by the entire class. Recommended Course Background: EN.580.421 and EN.580.422.
Instructor(s): D. Hunter; L. Tung
Area: Engineering.

EN.580.437. Neuro Data Design I. 4.0 Credits.
In this year long course, students will work together in small teams to design, develop, and deploy a functioning tool for practicing brain scientists, either for accelerating research or augmenting the clinic. The first semester will focus on designing the tool, including determining feasibility (for us in a year) and significance (for the targeted brain science community), as well as a statement of work specifying deliverables and milestones. The second semester will focus on developing the tool, getting regular feedback, and iterating, using the agile/lean development process. Recommended Course Background: numerical programming.
Instructor(s): J. Vogelstein
Area: Engineering, Natural Sciences.
EN.580.438. Neuro Data Design II. 4.0 Credits.
In this year long course, students will work together in small teams to design, develop, and deploy a functioning tool for practicing brain scientists, either for accelerating research or augmenting the clinic. The first semester will focus on scoping the tool, including determining feasibility (for us in a year) and significance (for the targeted brain science community), as well as a statement of work specifying deliverables and milestones. The second semester will focus on developing the tool, getting regular feedback, and iterating, using the agile/lean development process. Recommended background: numerical programming.
Instructor(s): J. Vogelstein
Area: Engineering.

EN.580.439. Models of the Neuron. 4.0 Credits.
Single-neuron modeling, emphasizing the use of computational models as links between the properties of neurons at several levels of detail. Topics include thermodynamics of ion flow in aqueous environments, biology and biophysics of ion channels, gating, nonlinear dynamics as a way of studying the collective properties of channels in a membrane, synaptic transmission, integration of electrical activity in multi-compartment dendritic tree models, and properties of neural networks. Students will study the properties of computational models of neurons; graduate students will develop a neuron model using data from the literature. Recommended Course Background: AS.110.302 or equivalent.
Meets with EN.580.639
Instructor(s): R. Winslow; S. Sarma
Area: Engineering, Natural Sciences.

EN.580.441. Cellular Engineering. 3.0 Credits.
This course focuses on principles and applications in cell engineering. Class lectures include an overview of molecular biology fundamentals, protein/ligand binding, receptor/ligand trafficking, cell-cell interactions, cell-matrix interactions, and cell adhesion and migration at both theoretical and experimental levels. Lectures will cover the effects of physical (e.g. shear stress, strain), chemical (e.g. cytokines, growth factors) and electrical stimuli on cell function, emphasizing topics on gene regulation and signal transduction processes. Furthermore, topics in metabolic engineering, enzyme evolution, polymeric biomaterials, and drug and gene delivery will be discussed. This course is intended as Part 1 of a two-semester sequence recommended for students in the Cell and Tissue Engineering focus area. Recommended Course Background: EN.580.221 or AS.020.305 and AS.020.306 or equivalent and AS.030.205
Meets with EN.580.641
Instructor(s): J. Green; K. Yarema
Area: Engineering, Natural Sciences.

EN.580.442. Tissue Engineering. 3.0 Credits.
This course focuses on the application of engineering fundamentals to designing biological tissue substitutes. Concepts of tissue development, structure and function will be introduced. Students will learn to recognize the majority of histological tissue structures in the body and understand the basic building blocks of the tissue and clinical need for replacement. The engineering components required to develop tissue-engineered grafts will be explored including biomechanics and transport phenomena along with the use of biomaterials and bioreactors to regulate the cellular microenvironment. Emphasis will be placed on different sources of stem cells and their applications to tissue engineering. Clinical and regulatory perspectives will be discussed. Recommended Course Background: EN.580.221 or AS.020.305 and AS.020.306, AS.030.205 Recommended EN.580.441/EN.580.641 Co-listed with EN.580.642
Instructor(s): J. Elisseef; W. Grayson
Area: Engineering.

EN.580.443. Advanced Orthopaedic Tissue Engineering. 3.0 Credits.
This course is intended to provide a comprehensive overview on the current state of the field of Orthopaedic Tissue Engineering. Students will apply engineering fundamentals learned in the Tissue Engineering course (EN.580.442/642) with special emphasis on how they apply to bone, cartilage, and skeletal muscle tissue engineering. The development, structure, mechanics, and function of each of these tissues will be discussed. Key articles from the last three decades that focus on stem cell- and cell-free, biomaterial-based approaches to regenerate functional tissues will be presented and analyzed. Practical (regulatory/commercial) considerations that restrict the translation of therapies to the clinic will be discussed.
Prerequisites: Grade of B or higher in EN.580.442 OR EN.580.642
Instructor(s): W. Grayson
Area: Engineering.

EN.580.444. Biomedical Applications of Glycoengineering. 3.0 Credits.
This course provides an overview of carbohydrate-based technologies in biotechnology and medicine. The course will begin by briefly covering basics of glycobiology and glycochemistry followed by detailed illustrative examples of biomedical applications of glycoengineering. A sample of these applications include the role of sugars in preventative medicine (e.g., for vaccine development and probiotics), tissue engineering (e.g., exploiting natural and engineered polysaccharides for creating tissue or organs de novo in the laboratory), regenerative medicine (e.g., for the treatment of arthritis or degenerative muscle disease), and therapy (e.g., cancer treatment). A major part of the course grade will be based on class participation with each student expected to provide a "journal club" presentation of a relevant paper as well as participate in a team-based project designed to address a current unmet clinical need that could be fulfilled through a glycoengineering approach. Recommended Course Background: EN.580.221 Molecules and Cells
Instructor(s): K. Yarema
Area: Engineering, Natural Sciences.

EN.580.445. Networks. 3.0 Credits.
Networks are ubiquitous in our modern society. The World Wide Web that links us to and enables information flows with the rest of the world is the most visible example. It is, however, only one of many networks within which we are situated. Our social life is organized around networks of friends and colleagues. These networks determine our information, influence our opinions, and shape our political attitudes. They also link us, often through important but weak ties, to everybody else in the United States and in the world. Economic and financial markets also look much more like networks than anonymous marketplaces. Firms interact with the same suppliers and customers and use Web-like supply chains. Financial linkages, both among banks and between consumers, companies and banks, also form a network over which funds flow and risks are shared. Systemic risk in financial markets often results from the counterparty risks created within this financial network. Food chains, interacting biological systems and the spread and containment of epidemics are some of the other natural and social phenomena that exhibit a marked networked structure. This course will introduce the tools for the study of networks. It will show how certain common principles permeate the functioning of these diverse networks and how the same issues related to robustness, fragility, and interlinkages arise in several different types of networks. Biological applications will be highlighted as material is presented. Recommended Course Background: EN.580.222
Instructor(s): S. Sarma
Area: Engineering.
EN.580.446. Physical Epigenetics. 3.0 Credits.
Epigenetics describes information heritable during cell division other than DNA sequence per se. Recent advances show the critical role of epigenetics in controlling gene expression, embryonic development, and common human diseases such as cancer. This course will introduce fundamental epigenetic principles with a focus on mechanisms, modeling, and physical principles, relationship to genetics, and application to understanding human disease mechanisms. Recommended Course Background: EN.580.221 Molecules and Cells or equivalent (molecular and cell biology), college level calculus and calculus-based general physics.
Instructor(s): A. Feinberg; T. Ha
Area: Engineering, Natural Sciences.

EN.580.452. Cell and Tissue Engineering Lab. 3.0 Credits.
This laboratory course will consist of three experiments that will provide students with valuable hands-on experience in cell and tissue engineering. Experiments include the basics of cell culture techniques, gene transfection and metabolic engineering, basics of cell-substrate interactions I, cell-substrate interactions II, and cell encapsulation and gel contraction. Spring semester only.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): E. Haase
Area: Engineering, Natural Sciences.

EN.580.457. Introduction to Rehabilitation Engineering: Design Lab. 3.0 Credits.
The primary objective of this course is to introduce biomedical engineering students to the challenges of engineering solutions for persons functioning with disabilities and apply that knowledge to the development of a new, improved device to be used for measurement or treatment of an impairment or disability. In order to achieve this goal, the objectives of the fall semester include: gaining a basic appreciation of the modalities used to treat impairments, the opportunities for application of engineering to improve treatment delivery, understanding the science and engineering applied to helping persons with disabilities function in the everyday world and an basic knowledge of the legal, ethical issues and employment opportunities in rehabilitation engineering. By the conclusion of this class, students should be able to: • Understand the breadth and scope of physical impairment and disability, including its associated pathophysiology • Characterize the material and design properties of current evaluation tools for assessment of impairments and adaptations for disability • Characterize the material and design properties of current modalities of treatment of impairments and adaptations for disability • Apply engineering analysis and design principles to critique current solutions for persons with disabilities in order to suggest improvements In the spring semester (in course EN.580.457), students will learn the biomedical engineering design process and its application to persons with disabilities. Working in groups of four to five, teams will work on a project derived from a needs analysis based on their visits to rehabilitation centers in the fall semester. Project will require instructor approval before the beginning of the spring semester. Each project will consist of a proposal for design of a new device or solution to a problem faced by persons with disabilities, preliminary "virtual" (e.g., CAD), and actual proof of concept working prototype.
Prerequisites: EN.580.422
Instructor(s): S. Paul
Area: Engineering.
EN.580.460. Theory of Cancer. 3.0 Credits.
The course will deal with important problems in cancer and how they can be approached using mathematical and computational modeling. The course will be organized around introductory material describing the biological and clinical problem and the mathematical and computational methodology that will be used for its analysis. This will be followed by analysis of key modeling papers dealing with the problem. An important part of the course will be a computational modeling project (small group or individual) dealing with modeling of cancer in which the students will extend existing models or formulate novel models of cancer, including cancer therapeutics. The students will strive to create models leading to new discoveries.
Instructor(s): A. Popel
Area: Engineering.

EN.580.462. Representations of Choice. 3.0 Credits.
In this course we will examine key computational topics from the nascent fields of decision neuroscience and neuroeconomics. After taking this course students will have an understanding of how the field emerged and will develop a critical appreciation of the advantages and limitations of different analytical approaches. Students will also be able to discuss the current knowledge on processes of valuation, value-learning and decision-making in relation to their computational representations at the behavioral and neural level. Linear Algebra and programming experience (python, matlab, or C) recommended.
Instructor(s): V. Chib
Area: Engineering.

EN.580.466. Statistical Methods in Imaging. 3.0 Credits.
Denosing, segmentation, texture modeling, tracking, object recognition are challenging problems in imaging. We will present a collection of statistical models and methods in order to adress these, including the E.M algorithm, Maximum Entropy Modeling, Markov Random Fields, Markov Chain Monte Carlo, Boltzmann Machines and Multilayer Perceptrons. Recommended Course Background: AS.110.202 and EN.553.310 or equivalent.
Instructor(s): B. Jedynak
Area: Engineering, Quantitative and Mathematical Sciences.

EN.580.468. The Art of Data Science. 3.0 Credits.
In this course, we will cover the fundamentals of doing data science research, explaining "best practices" for each step, that collectively comprise an upward spiral. These steps include: (i) asking an interesting question, (ii) determining the degree to which the answer is known, (iii) assessing there currently exists data to likely obtain a satisfactory answer, (iv) exploring the data set, (v) cleaning up the dataset, (vi) formalizing a statistical inquiry, (vii) posing a statistical model which we hope will yield satisfactory answers, (viii) devising a test to assess the answer, (ix) building an estimator to assess the model, (x) checking the model, (xi) reporting the results, (xii) suggesting the next experiment to perform or question to answer to further enhance the model. Note that this course will largely be project based; each student will be expected to complete each of the above steps on some real data of interest to the student. Lectures will be minimal, giving introductory explanations one day, hopefully only part of the time. The rest of the time, we will work independently or in small groups to complete the weekly portion of the overall project. Please come ready to do science! If you don't have questions that you want answered, you can work in small groups, but each student will need to write the code and reports on their own. Recommended Course Background: No courses are formally required, though students will need to write numerical code (in R, Python, or Julia), and make reports using LaTeX, knitr, or Jupyter notebooks or similar.
Instructor(s): J. Vogelstein
Area: Engineering.

EN.580.471. Principles of Design of BME Instrumentation. 4.0 Credits.
This core design course will cover lectures and hands-on labs. The material covered will include fundamentals of biomedical sensors and instrumentation, FDA regulations, designing with electronics, biopotentials and ECG amplifier design, recording from heart, muscle, brain, etc., diagnostic and therapeutic devices (including pacemakers and defibrillators), applications in prosthetics and rehabilitation, and safety. The course includes extensive laboratory work involving circuits, electronics, sensor design and interface, and building complete biomedical instrumentation. The students will also carry out design challenge projects, individually or in teams (examples include "smart cane for blind," "computer interface for quadriplegic"). Students satisfying the design requirement must also register for EN.580.571. Lab Fee: $150.
Recommended Course Background: EN.520.345
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): N. Thakor
Area: Engineering, Natural Sciences.

EN.580.472. Medical Imaging Systems. 3.0 Credits.
An introduction to the physics, instrumentation, and signal processing methods used in general radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images. Cross-listed with Neuroscience and Electrical and Computer Engineering (EN.520.432).
Prerequisites: EN.580.222 OR EN.520.214
Instructor(s): M. Bell
Area: Engineering.
EN.580.473. Modern Biomedical Imaging Instrumentation and Techniques. 3.0 Credits.
An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern biomedical imaging equipment in clinical and research settings. Co-listed with EN.520.434 Recommended course background: EN.520.432 or EN.580.472
Prerequisites: Students may not have taken EN.580.773.
Instructor(s): B. Tsui
Area: Engineering, Natural Sciences.

EN.580.476. Magnetic Resonance in Medicine. 3.0 Credits.
This course provides the student with a complete introduction to the physical principles, hardware design, and signal processing used in magnetic resonance imaging and magnetic resonance spectroscopy. The course is designed for students who wish to pursue research in magnetic resonance. Recommended course background: EN.580.222 or EN.520.214. Co-listed with EN.580.673.
Instructor(s): M. Schar; P. Bottomley
Area: Engineering.

EN.580.479. X-ray Imaging and Computed Tomography. 3.0 Credits.
This course provides students with an intermediate-level understanding of the physics, engineering, algorithms, and applications of medical x-ray imaging and computed tomography (CT). It is intended for senior undergraduates (EN.580.479) and/or graduate students (EN.580.679) in Biomedical Engineering, Computer Science, Electrical and Computer Engineering, or related fields in science and engineering. Topics include the physics of x-ray interaction and detection, image quality modeling and assessment, 3D image reconstruction (including analytical and iterative approaches), and applications in diagnostic and image-guided procedures. Recommended Course Background: EN.580.472 and/or EN.580.473 and familiarity with Matlab.
Instructor(s): J. Siewerdsen
Area: Engineering.

EN.580.480. Precision Care Medicine. 3.0 Credits.
Precision Care Medicine is a two-semester project-based learning course. Projects will use methods of machine learning and mechanistic and statistical modeling to develop novel data-driven solutions to important health care problems that arise in anesthesiology and critical care medicine. The scope of such problems is vast, and few have been approached before. Examples include data- and modeling-driven approaches to: optimal selection of patients to be admitted to ICUs; optimal determination of when it is safe to discharge a patient from an ICU; early prediction of pending changes in the clinical state of patients in an ICU; data-driven selection of patient therapy; and others. In the first semester, students will assemble into teams of 3-4, and will work with their project mentors (clinical faculty in the ACCM Department; Drs. Winslow and Sarma) to develop a project work plan. In the remainder of the course, they will apply engineering approaches to solve the important health care problems in their projects. Class time will include: lectures and tutorials covering the physiology, medicine, and engineering principles relevant to each project; project work in a setting where faculty are available to assist students with challenges. Each team will present project updates to the entire class at regular intervals so that every student becomes familiar with each project. Teams will also be charged with designing, validating and deploying a web-application that delivers the computational method for solving the underlying healthcare problem to the user. HIPAA regulations, use of human subjects data, and requirements for FDA Class II and Medical Device Data Systems approval will be covered.
Instructor(s): R. Winslow; S. Sarma
Area: Engineering.

EN.580.481. Precision Care Medicine. 3.0 Credits.
Precision Care Medicine is a two-semester project-based learning course. Projects will use methods of machine learning and mechanistic and statistical modeling to develop novel data-driven solutions to important health care problems that arise in anesthesiology and critical care medicine. The scope of such problems is vast, and few have been approached before. Examples include data- and modeling-driven approaches to: optimal selection of patients to be admitted to ICUs; optimal determination of when it is safe to discharge a patient from an ICU; early prediction of pending changes in the clinical state of patients in an ICU; data-driven optimal selection of patient therapy; and others. In the first semester, students will assemble into teams of 3-4, and will work with their project mentors (clinical faculty in the ACCM Department; Drs. Winslow and Sarma) to develop a project work plan. In the remainder of the course, they will apply engineering approaches to solve the important health care problems in their projects. Class time will include: lectures and tutorials covering the physiology, medicine, and engineering principles relevant to each project; project work in a setting where faculty are available to assist students with challenges. Each team will present project updates to the entire class at regular intervals so that every student becomes familiar with each project. Teams will also be charged with designing, validating and deploying a web-application that delivers the computational method for solving the underlying healthcare problem to the user. HIPAA regulations, use of human subjects data, and requirements for FDA Class II and Medical Device Data Systems approval will be covered.
Area: Engineering.
EN.580.483. Nuclear Medicine Imaging. 3.0 Credits.
This course provides an intermediate-level introduction to the instrumentation, image processing and reconstruction methods used in planar nuclear medicine imaging, single-photon emission computed tomography (SPECT) and positron emission tomography (PET). Topics include radioactive decay, nuclear medicine instrumentation including radiation detectors and associated electronics, analytic and statistical iterative tomographic reconstruction, imaging physics, and image quality in the context of these three modalities. This course will be taught at the School of Medicine Campus. Recommended Course Background: EN.520.432/EN.580.472 and EN.520.434/EN.580.473
Instructor(s): A. Rahmim; B. Tsui; E. Frey; Y. Du
Area: Engineering.

EN.580.488. Foundations of Computational Biology and Bioinformatics II. 3.0 Credits.
This course will introduce probabilistic modeling and information theory applied to biological sequence analysis, focusing on statistical models of protein families, alignment algorithms, and models of evolution. Topics will include probability theory, score matrices, hidden Markov models, maximum likelihood, expectation maximization and dynamic programming algorithms. Homework assignments will require programming in Python. Foundations of Computational Biology I is not a preq. Recommended Course Background: Math through linear algebra and differential equations, EN.580.221 or equivalent, EN.601.226 or equivalent
Instructor(s): R. Karchin
Area: Engineering, Natural Sciences.

EN.580.491. Learning Theory. 3.0 Credits.
The course introduces the probabilistic foundations of learning theory. We will discuss topics in regression, estimation, optimal control, system identification, Bayesian learning, and classification. Our aim is to first derive some of the important mathematical results in learning theory, and then apply the framework to problems in biology, particularly animal learning and control of action. Recommended Course Background: AS.110.201 and AS.110.302
Instructor(s): R. Shadmehr
Area: Engineering.

EN.580.492. Build-a-Genome Mentor. 4.0 Credits.
In addition to producing and sequencing DNA segments like regular B-a-G students, mentors will help prepare and distribute reagents, and maintain a Moddle site to track student reagent use and productivity. Mentors will also be expected to mentor specific students who are learning new techniques for the first time, contribute to the computational and biotech infrastructure associated with Build-a-Genome, and pursue at least one independent research project. Successful completion of this course provides 3 credit hours toward the supervised research requirement for Molecular and Cellular Biology majors. Co-listed AS.020.451 Permission Required.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. Bader; K. Zeller
Area: Engineering, Natural Sciences.

EN.580.493. Imaging Instrumentation. 4.0 Credits.
This course is intended to introduce students to imaging instrumentation. The class will be lab-oriented, giving hands-on experience with data collection and processing using a configurable optical system. Specific topics will include the programming and control of electromechanical elements, imaging data acquisitions, image formation and processing (e.g. 3D reconstruction), and imaging system analysis and optimization. Recommended Course Background: EN.580.222 Systems and Controls or EN.520.214 Signals and Systems. Programming experience highly desirable.
Instructor(s): J. Stayman
Area: Engineering.

EN.580.495. Microfabrication Lab. 4.0 Credits.
This laboratory course introduces the principles used in the construction of microelectronic devices, sensors, and micromechanical structures. Students will work in the laboratory on the fabrication and testing of a device. Accompanying lecture material covers basic processing steps, design and analysis CAD tools, and national foundry services. Co-listed with EN.530.495 and EN.520.495 Seniors only. Permission Required.
Instructor(s): A. Andreou; J. Wang
Area: Engineering, Natural Sciences.

EN.580.497. Advanced Design Projects: Instrumentation. 3.0 Credits.
This course will provide project-specific mentorship and guidance for a team to complete a sophisticated prototype and demonstrate technical feasibility towards impacting a clinical problem. Prototyping and testing tools and procedures will be taught and employed on a per-project basis. Documentation of progress through a design history file and course report is required. Teams will be meet biweekly with course faculty through a Desk Review format. Students are expected to work in teams between desk reviews and present progress updates as well as short- and long-term action plans at each desk review. A final presentation is expected at the end of the semester that will involve course faculty as well as a clinical sponsor (called a committee meeting in Design Teams). Additionally, each team must identify a domain expert from the WSE faculty that agrees to attend the final presentation and at least 2 desk reviews. This faculty will focus on guiding and assessing the team's technical achievements within the context of biomedical instrumentation.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): A. Manbachi; N. Durr
Area: Engineering.
EN.580.498. Adv. Design Projects: Instrumentation. 3.0 Credits.
This course will provide project-specific mentorship and guidance for a
team to complete a sophisticated prototype and demonstrate technical
feasibility towards impacting a clinical problem. Prototyping and testing
tools and procedures will be taught and employed on a per-project basis.
Documentation of progress through a design history file and course
report is required. Teams will be meet biweekly with course faculty
through a Desk Review format. Students are expected to work in teams
between desk reviews and present updates as well as short-
and long-term action plans at each desk review. A final presentation is
expected at the end of the semester that will involve course faculty as
well as a clinical sponsor (called a committee meeting in Design Teams).
Additionally, each team must identify a domain expert from the WSE
faculty that agrees to attend the final presentation and at least 2 desk
reviews. This faculty will focus on guiding and assessing the team’s
technical achievements within the context of biomedical instrumentation.
Prerequisites: Students must have completed Lab Safety training prior to
registering for this class.
Instructor(s): A. Manbachi; N. Durr
Area: Engineering.
EN.580.501. Fall BME Research - Freshman/Sophomore. 3.0 Credits.
Instructor(s): Staff.
EN.580.502. Spring BME Research - Freshman/Sophomore. 1.0 - 4.0
Credits.
Practicum in Biomedical Engineering Research projects or engineering
design projects under the supervision of any member of the BME faculty.
Instructor(s): Staff.
EN.580.510. Biomedical Engineering Undergraduate Research. 1.0 - 3.0
Credits.
Student participation in ongoing research activities. Research is
carried out under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.511. Biomedical Engineering Undergraduate Research. 1.0 - 3.0
Credits.
Student participation in ongoing research activities. Research is
carried out under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.512. Spring BME Independent Study - Freshman/Sophomore. 0.0
- 4.0 Credits.
Directed readings or other literature research under the direction of any
member of the BME faculty.
Instructor(s): Staff.
EN.580.531. Fall BME Research - Junior/Senior. 3.0 Credits.
Instructor(s): Staff.
EN.580.532. Spring BME Research - Junior/Senior. 3.0 Credits.
Research projects or engineering design projects under the supervision of
any member of the BME faculty.
Instructor(s): Staff.
EN.580.541. Fall BME Independent Study - Junior/Senior. 3.0 Credits.
Directed readings or other literature research under the direction of any
BME faculty member. Junior or Senior standing.
Instructor(s): Staff.
EN.580.542. Spring BME Independent Study - Junior/Senior. 0.0 - 4.0
Credits.
Directed readings or other literature research under the direction of any
BME faculty member.
Instructor(s): Staff.
EN.580.550. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.551. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.552. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.553. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.554. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.555. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.556. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.557. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.558. Biomedical Engineering Group Undergraduate Research. 1.0
- 3.0 Credits.
Student participation in ongoing research activities. Research is
conducted under the supervision of a faculty member and often in
conjunction with other members of the research group.
Instructor(s): Staff.
EN.580.565. Advanced Focus Area Research: Imaging & Sensors/Instrumentation/Micro-Nano Technology. 3.0 Credits.
This course provides students with the opportunity to consider unsolved issues within their focus area, delve into the current cutting-edge research, and provide a synopsis of the next steps required to advance a particular field. "Advanced Focus Area Research" is a one-semester course in which students complete a research project, present their work, and write a publication ready manuscript under the guidance of their Primary Investigator (PI) and a Focus Area mentor. Priority to Junior and Senior BME majors. Recommended Course Background: Previous research experience. Students must complete the online Undergraduate Lab safety courses available through "MyLearning" including Bloodborne Pathogens, HIPAA, and any other online training as needed.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.
Instructor(s): E. Haase
Area: Engineering, Quantitative and Mathematical Sciences.

EN.580.567. Advanced Focus Area Research: Systems Biology. 3.0 Credits.
This course provides students with the opportunity to consider unsolved issues within their focus area, delve into the current cutting-edge research, and provide a synopsis of the next steps required to advance a particular field. "Advanced Focus Area Research" is a one-semester course in which students complete a research project, present their work, and write a publication ready manuscript under the guidance of their Primary Investigator (PI) and a Focus Area mentor. Priority to Junior and Senior BME majors. Recommended Course Background: Previous research experience. Students must complete the online Undergraduate Lab safety courses available through "MyLearning" including Bloodborne Pathogens, HIPAA, and any other online training as needed.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.
Instructor(s): E. Haase
Area: Engineering, Quantitative and Mathematical Sciences.

EN.580.571. Honors Instrumentation. 2.0 Credits.
Student must have taken 580.471/771. Students will develop a term paper and patent application and carry out a hands-on individual or team project throughout the semester. Previous projects include design of EEG amplifier, voltage clamp and patch clamp, vision aid of blind, pacemaker/defibrillator, sleep detection and alert device, glucose sensor and regulation, temperature controller, eye movement detection and device control, ultrasound ranging and tissue properties, impedance plethysmography, lie detector, blood alcohol detector, pulse oximeter, etc.
Instructor(s): N. Thakor.

EN.580.580. Senior Design Project. 3.0 Credits.
Per Independent or team design project to design and evaluate a system. The design should demonstrate creative thinking and experimental skills, and must draw upon advanced topics of biomedical and traditional engineering. Permission Required.
Instructor(s): A. Manbach; Y. Yazdi.

EN.580.581. Senior Design Project. 3.0 Credits.
Independent or team design project to design and evaluate a system. The design should demonstrate creative thinking and experimental skills, and must draw upon advanced topics of biomedical and traditional engineering. Permission Required.
Instructor(s): A. Manbach.

EN.580.590. Biomedical Internship. 1.0 Credit.
Instructor(s): Staff.

EN.580.591. Advanced Focus Area Research: Cell/Tissue/Biomaterials. 3.0 Credits.
This course provides students with the opportunity to consider unsolved issues within their focus area, delve into the current cutting-edge research, and provide a synopsis of the next steps required to advance a particular field. "Advanced Focus Area Research" is a one-semester course in which students complete a research project, present their work, and write a publication ready manuscript under the guidance of their Primary Investigator (PI) and a Focus Area mentor. Priority to Junior and Senior BME majors. Recommended Course Background: Previous research experience. Students must complete the online Undergraduate Lab safety courses available through "MyLearning" including Bloodborne Pathogens, HIPAA, and any other online training as needed.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.
Instructor(s): E. Haase.

EN.580.592. Advanced Focus Area Research: Computational Biology. 3.0 Credits.
This course provides students with the opportunity to consider unsolved issues within their focus area, delve into the current cutting-edge research, and provide a synopsis of the next steps required to advance a particular field. "Advanced Focus Area Research" is a one-semester course in which students complete a research project, present their work, and write a publication ready manuscript under the guidance of their Primary Investigator (PI) and a Focus Area mentor. Priority to Junior and Senior BME majors. Recommended Course Background: Previous research experience. Students must complete the online Undergraduate Lab safety courses available through "MyLearning" including Bloodborne Pathogens, HIPAA, and any other online training as needed.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.
Instructor(s): E. Haase.

EN.580.593. Advanced Focus Area Research: Imaging & Sensors/Instrumentation/Micro-Nano Technology. 3.0 Credits.
This course provides students with the opportunity to consider unsolved issues within their focus area, delve into the current cutting-edge research, and provide a synopsis of the next steps required to advance a particular field. "Advanced Focus Area Research" is a one-semester course in which students complete a research project, present their work, and write a publication ready manuscript under the guidance of their Primary Investigator (PI) and a Focus Area mentor. Priority to Junior and Senior BME majors. Recommended Course Background: Previous research experience. Students must complete the online Undergraduate Lab safety courses available through "MyLearning" including Bloodborne Pathogens, HIPAA, and any other online training as needed.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.
Instructor(s): E. Haase.
EN.580.603. Special Topics in Bioengineering Innovation & Design. 1.0 Credit.
This year long seminar series features experts from the medical device industry, venture capital firms, FDA, patent attorneys, entrepreneurs, and many more. They will share their real-world insights into the medical device innovation and commercialization process. Some of the topics covered will include bioethics, regulatory and reimbursement planning, medical device recalls, good design practices, and entrepreneurial success stories. The overarching philosophy of this seminar series is to complement the theoretical and practical aspects of the program curriculum, by learning from the experiences and insights of professionals in the field. For CBID MSE students only.
Instructor(s): S. Acharya.

EN.580.607. Regulation of Medical Devices. 1.0 Credit.
This course introduces graduate students in Bioengineering Innovation and Design to the medical device regulatory framework, as it pertains to bringing a medical device from concept to market. Topics covered include, FDA Design Controls; Regulatory Approval mechanisms, including the 510k and PMA process; Investigational Device exemption (IDE); planning clinical trials needed for bringing a medical device to market; and postmarket surveillance. Students learn from a series of invited lecturers from the FDA as well as professionals from the medical device industry. This summer course is required for CBID masters students and is not open to any other students.
Instructor(s): S. Acharya.

EN.580.608. Identification and Validation of Medical Device Needs. 6.0 Credits.
This course teaches the art and skill of identifying medical device opportunities by experiencing real world scenarios in an immersive clinical environment. Students rotate through multiple clinical disciplines and become part of the team of senior clinicians, surgeons, residents, fellows, nurses and medical technologists. They learn to identify unmet medical device needs through direct observations in a variety of clinical settings including the hospital ward and operating room, interviews (with patients, doctors, nurses, hospital administration), literature survey, and more. Concurrently, they learn the process of filtering all observations to a few valid medical device opportunities by assessing the market size, intellectual property landscape, regulatory framework, and competitor dynamics in addition to the clinical impact that such a device could have. The ability to identify a relevant medical device need is an important first step in the medical device innovation cycle; this course aims to provide students with practical hands-on training in that process.
Instructor(s): C. Weiss; H. Nguyen; S. Acharya.

EN.580.609. BME Teaching Practicum. 3.0 Credits.
Instructor(s): E. Haase.

EN.580.611. Medical Device Design and Innovation. 4.0 Credits.
For CBID MSE students only. Registration with instructor's permission only.
Instructor(s): S. Acharya.

EN.580.612. Medical Device Design and Innovation. 4.0 Credits.
For CBID MSE students only.
Instructor(s): S. Acharya.

EN.580.618. Needs Identification and Validation for Global Health Innovation. 4.0 Credits.
Limited to CBID students only
Instructor(s): S. Acharya.
EN.580.619. Bioengineering Innovation and Design - Global Health. 4.0 Credits.
For CBID MSE students only. Registration with instructor's permission only.
Instructor(s): S. Acharya.

EN.580.620. Principles and Practice of Global Health Innovation and Design. 4.0 Credits.
For CBID MSE students only. Instructor's Permission Required.
Instructor(s): S. Acharya.

EN.580.621. Insight Informed Innovation I. 3.0 Credits.
For CBID MSE students only. Registration with instructor's permission only.
Instructor(s): B. Craft; P. Fears.

EN.580.623. Insight Informed Innovation II. 3.0 Credits.
This course is intended to equip students with a structured process and the tools required to: 1. Identify opportunities for new medical devices through unmet, unarticulated and underserved stakeholder needs. 2. Link these insights to an exhaustive set of potential solutions. 3. Synthesize solutions and features into product concepts. Recommended Course Background: Insight Informed Innovation I (summer)
Instructor(s): B. Craft; P. Fears.

EN.580.625. Structure and Function of the Auditory and Vestibular Systems. 3.0 Credits.
This course will cover basic functions of the auditory and vestibular pathways responsible for perception of sound and balance. Topics include: hair cell structure and mechanotransduction, hair cell electromotility and cochlear active force production, hair cell synaptic signaling, cochlear development and role of glia in the inner ear, primary auditory and vestibular stimulus encoding, afferents and the first-order brainstem nuclei, as well as clinical consequences of peripheral damage, physiology of hearing loss, vestibular loss, tinnitus, hair cell regeneration and gene therapy. Moving more centrally, synaptic transmission and signal processing in central neurons, and complex sound perception and movement control will be discussed. Aspects such as speech perception, sound localization, vestibular reflexes, vestibular compensation, and self-motion perception are discussed with an integrated perspective covering perceptual, physiological, and mechanistic data. Grades will be based on participation in class, homework, and first-half and second-half exams (both in class, closed book, short answer/essay types). Offered in odd-numbered years. This course will meet in 529 Ross Research Bldg. at the School of Medicine campus. Recommended Background: general introduction to Neuroscience. Undergraduates with knowledge in Neuroscience welcome.
Instructor(s): K. Cullen; P. Fuchs.

EN.580.626. Structure & Function of the Auditory and Vestibular Brain. 3.0 Credits.
Brain mechanisms and perception of sound and balance. This course is an accompaniment for EN.580.625, although the courses can be taken in either order. Topics include representation of sound and balance in neural discharge patterns, anatomy of the central auditory and vestibular systems, synaptic transmission and signal processing in central neurons, and complex sound perception and movement control. Aspects such as speech perception, sound localization, vestibular reflexes and vestibular compensation are discussed with an integrated perspective covering perceptual, physiological, and mechanistic data. Recommended Course Background: EN.580.222 and EN.580.422 or equivalent. Taught at the School of Medicine, Traylor Bldg. 529.
Instructor(s): X. Wang.

EN.580.628. Topics in Systems Neuroscience. 1.0 Credit.
This course consists of weekly discussions of current literature in systems neuroscience. The selected readings will focus on neural mechanisms for perception, attention, motor behavior, learning, and memory, as studied using physiological, psychophysical, computational, and imaging techniques. Students are expected to give presentations and participate in discussions. Recommended Course Background: AS.110.302, EN.520.214, EN.580.421 or equivalent. Students will have to attend the organizational meeting to be able to enroll. The course is run by the Neuroscience department. Enrollment numbers may be limited by the course directors, and priority will be given to Neuroscience graduate students. Please contact the Neuroscience department for more information and the date of the organizational meeting.
Instructor(s): K. Zhang; X. Wang.

EN.580.630. Theoretical Neuroscience. 3.0 Credits.
Theoretical methods for analyzing information encoding and functional representations in neural systems. Models of single and multiple neural spike trains based on stochastic processes and information theory; detection and estimation of behaviorally relevant parameters from spike trains; system theoretic methods for analyzing sensory receptive fields; network models of neural systems. Both theoretical methods and the properties of specific well-studied neural systems will be discussed. Recommended Course Background: EN.580.422 or equivalent, EN.553.420 or equivalent, EN.580.222 or equivalent.
Instructor(s): K. Zhang; X. Wang.

EN.580.631. Introduction to Computational Medicine I. 4.0 Credits.
Computational medicine is an emerging discipline in which computer models of disease are developed, constrained using data measured from individual patients, and then applied to deliver precision health care. Introduction to Computational Medicine I is the first in a sequence of two courses on computational medicine. It covers the core concepts of computational physiological medicine and computational anatomy. The first half of this course will cover computational physiological medicine. Students will learn how to: use biophysical laws and data to formulate computational models of physiological systems in health and disease; analyze the behaviors of these models using analytical and simulation approaches; apply models to understand their use in diagnosing and treating disease. The second half of this course will cover computational anatomy. Students will learn how to: model anatomies using magnetic resonance imaging data; compare anatomies via mappings onto anatomical atlases; discover anatomical biomarkers of disease; analyze changes in the connectivity of anatomies in disease. Class time will emphasize hands-on learning through data analysis, software development, and simulation. All instructional materials will be made available at the beginning of the course. Recommended Course Background: C++, Matlab or Python.
Instructor(s): M. Miller; R. Winslow.
EN.580.632. Ionic Channels in Excitable Membranes. 3.0 Credits.
Ion channels are key signaling molecules that support electrical communication throughout the body. As such, these channels are a central focus of biomedical engineering as it relates to neuroscience, computational biology, biophysics, and drug discovery. The course introduces the engineering and molecular strategies used to understand the function of ionic channels. The course also surveys key papers that paint the current picture of how ion channels open and conduct ions. Biological implications of these properties are emphasized throughout. Finally, the course introduces how optical and electrophysiological methods now promise to revolutionize understanding of ionic channels. This course can be seen as a valuable partner of Models of the Neuron (EN.580.439). Recommended Course Background: EN.580.421 and EN.580.422 or equivalent. AS.110.201, AS.110.302
Instructor(s): D. Yue
Area: Engineering, Natural Sciences.

EN.580.638. Neuro Data Design II. 4.0 Credits.
In this year long course, students will work together in small teams to design, develop, and deploy a functioning tool for practicing brain scientists, either for accelerating research or augmenting the clinic. The first semester will focus on scoping the tool, including determining feasibility (for us in a year) and significance (for the targeted brain science community), as well as a statement of work specifying deliverables and milestones. The second semester will focus on developing the tool, getting regular feedback, and iterating, using the agile/lean development process. Recommended background: numerical programming.
Instructor(s): J. Vogelstein.

EN.580.639. Models of the Neuron. 4.0 Credits.
Single-neuron modeling, emphasizing the use of computational models as links between the properties of neurons at several levels of detail. Topics include thermodynamics of ion flow in aqueous environments, biology and biophysics of ion channels, gating, nonlinear dynamics as a way of studying the collective properties of channels in a membrane, synaptic transmission, integration of electrical activity in multi-compartment dendritic tree models, and properties of neural networks. Students will study the properties of computational models of neurons; graduate students will develop a neuron model using data from the literature. Differs in that an advanced modeling project using data from the literature is required. Graduate version of EN.580.439. Recommended Course Background: AS.110.302 or equivalent.
Instructor(s): R. Winslow; S. Sarma.

EN.580.640. Systems Pharmacology and Personalized Medicine. 3.0 Credits.
We have moved beyond the 'one-size-fits-all' era of medicine. Individuals are different, their diseases are different, and their responses to drugs are different too. This variability is not just from person to person; heterogeneity is observed even between tumors within the same person, and between sites within the same tumor. These levels of variability among the human population must be accounted for to improve patient outcomes and the efficiency of clinical trials. Some of the ways in which this is being explored include: drugs are being developed hand-in-hand with the tests needed to determine whether or not they will be effective; tumor fragments excised from patients are being cultured in the lab for high-throughput testing of drugs and drug combinations; data-rich assays such as genomics and proteomics identify thousands of potentially significant differences between individuals; and computational models are being used to predict which therapies will work for which patients. This course will focus on the applications of pharmacokinetics and pharmacodynamics to simulating the effects of various drugs across a heterogeneous population of diseased individuals. Such computational approaches are needed to harness and leverage the vast amounts of data and provide insight into the key differences that determine drug responsiveness. These approaches can also explore the temporal dynamics of disease and treatment, and enable the modification of treatment during recovery. Recommended background: 110.201 Linear Algebra, 110.302 Differential Equations, and 553.311 Probability and Statistics (or equivalent).
Instructor(s): F. Macgabhann.

EN.580.641. Cellular Engineering. 4.0 Credits.
This course focuses on principles and applications in cell engineering. Class lectures include an overview of molecular biology fundamentals, protein/ligand binding, receptor/ligand trafficking, cell-cell interactions, cell-matrix interactions, and cell adhesion and migration at both theoretical and experimental levels. Lectures will cover the effects of physical (e.g. shear stress, strain), chemical (e.g. cytokines, growth factors) and electrical stimuli on cell function, emphasizing topics on gene regulation and signal transduction processes. Furthermore, topics in metabolic engineering, enzyme evolution, polymeric biomaterials, and drug and gene delivery will be discussed. This course meets with EN.580.441 but includes additional requirements designed for the core curriculum of the RIE (Regenerative and Immune Engineering) track of the BME masters program. The course is also appropriate for Cell & Tissue Engineering Ph.D. students and may be taken by advanced undergraduate students upon permission of the instructor. Prerequisites: Graduate standing with background in cell biology and biochemistry or EN.580.221 or AS20.305 and AS.020.306 (or equivalent) and AS.030.205 or permission of the instructor.
Instructor(s): J. Green; K. Yarema.
EN.580.642. Tissue Engineering. 3.0 Credits.
This course focuses on the application of engineering fundamentals to designing biological tissue substitutes. Concepts of tissue development, structure and function will be introduced. Students will learn to recognize the majority of histological tissue structures in the body and understand the basic building blocks of the tissue and clinical need for replacement. The engineering components required to develop tissue-engineered grafts will be explored including biomechanics and transport phenomena along with the use of biomaterials and bioreactors to regulate the cellular microenvironment. Emphasis will be placed on different sources of stem cells and their applications to tissue engineering. Clinical and regulatory perspectives will be discussed. Co-listed with EN.580.442.
Recommended Course Background: EN.580.221 or AS.020.305 and AS.020.306, AS.030.205, EN.580.441/EN.580.641
Area: Engineering.

EN.580.643. Advanced Orthopaedic Tissue Engineering. 3.0 Credits.
This course is intended to provide a comprehensive overview on the current state of the field of Orthopaedic Tissue Engineering. Students will apply engineering fundamentals learned in the Tissue Engineering course (580.442/580.642) with special emphasis on how they apply to bone, cartilage, and skeletal muscle tissue engineering. The development, structure, mechanics, and function of each of these tissues will be discussed. Key articles from the last three decades that focus on stem cell- and cell-free, biomaterial-based approaches to regenerate functional tissues will be presented and analyzed. Practical (regulatory/commercial) considerations that restrict the translation of therapies to the clinic will be discussed. Undergraduate by permission only. Recommend Course Background: EN.580.442 or EN.580.642.
Instructor(s): W. Grayson.

EN.580.644. Biomedical Applications of Glycoengineering. 3.0 Credits.
This course provides an overview of carbohydrate-based technologies in biotechnology and medicine. The course will begin by briefly covering basics of glycobiology and glycochemistry followed by detailed illustrative examples of biomedical applications of glycoengineering. A sample of these applications include the role of sugars in preventative medicine (e.g., for vaccine development and probiotics), tissue engineering (e.g., exploiting natural and engineered polysaccharides for creating tissue or organs de novo in the laboratory), regenerative medicine (e.g., for the treatment of arthritis or degenerative muscle disease), and therapy (e.g., cancer treatment). A major part of the course grade will be based on class participation with each student expected to provide a “journal club” presentation of a relevant paper as well as participate in a team-based project designed to address a current unmet clinical need that could be fulfilled through a glycoengineering approach. Recommended Course Background: EN.580.221 Molecules and Cells or equivalent (molecular and cell biology), college level calculus and calculus-based general physics.
Instructor(s): K. Yarema
Area: Engineering, Natural Sciences.

EN.580.646. Molecular Immunoengineering. 3.0 Credits.
An in-depth study of the use of biomolecular engineering tools and techniques to manipulate immune function for clinical translation. The course will begin with a brief overview of the immune system, placing a particular emphasis on the molecular-level interactions that determine phenotypic outcomes. The remainder of the curriculum will address ways in which integrative approaches incorporating biochemistry, structural biophysics, molecular biology, and engineering have been used either to stimulate the immune response for applications in cancer and infectious disease, or to repress immune activation for autoimmune disease therapy. Recommended background: Biochemistry and Cell Biology or the BME Molecules and Cells. Those without recommended background should contact the instructor prior to enrolling.
Instructor(s): J. Spangler
Area: Engineering, Natural Sciences.

EN.580.647. Computational Stem Cell Biology. 3.0 Credits.
This course will provide the student with a mechanistic and systems biology-based understanding of the two defining features of stem cells: multipotency and self-renewal. We will explore these concepts across several contexts and perspectives, emphasizing seminal and new studies in development and stem cell biology, and the critical role that computational approaches have played. The course will start with an introduction to stem cells and a tutorial covering computational basics. The biological contexts that we will cover thereafter include "Cell Identity", "Pluripotency and multipotency", "Stem cells and their niche", "Modeling cell fate decisions", and "Engineering cell fate". This class is heavily weighted by individual computational assignments. The motivation for this strategy is that regularly occurring, moderately-sized computational projects are the most efficient way to impart an understanding of our models of this extraordinary class of cells, and to inspire a sense of excitement and empowerment. Preferred background: 580.221 Molecules and Cells or equivalent and familiarity with the UNIX shell.
Prerequisites: Students may earn credit for EN.580.447 or EN.580.647, but not both.
Instructor(s): P. Cahan
Area: Engineering, Natural Sciences.

EN.580.656. Introduction to Rehabilitation Engineering. 3.0 Credits.
The primary objective of this course is to introduce biomedical engineering students to the challenges of engineering solutions for persons functioning with disabilities. In order to achieve this goal, other objectives include: gaining a basic appreciation of the modalities used to treat impairments, the opportunities for application of engineering to improve treatment delivery, understanding the science and engineering applied to helping persons with disabilities function in the everyday world and an basic knowledge of the legal, ethical issues and employment opportunities in rehabilitation engineering. By the conclusion of this class, students should be able to: understand the breadth and scope of physical impairment and disability, including its associated pathophysiology; characterize the material and design properties of current evaluation tools for assessment of impairments and adaptations for disability; characterize the material and design properties of current modalities of treatment of impairments and adaptations for disability; apply engineering analysis and design principles to critique current solutions for persons with disabilities in order to suggest improvements.
Instructor(s): S. Paul
Area: Engineering.
EN.580.668. The Art of Data Science. 3.0 Credits.
In this course, we will cover the fundamentals of doing data science research, explaining "best practices" for each step, that collectively comprise an upward spiral. These steps include: (i) asking an interesting question, (ii) determining the degree to which the answer is known, (iii) assessing there currently exists data to likely obtain a satisfactory answer, (iv) exploring the data set, (v) cleaning up the dataset, (vi) formalizing a statistical inquiry, (vii) positing a statistical model which we hope will yield satisfactory answers, (viii) devising a test to assess the answer, (ix) building an estimator to assess the model, (x) checking the model, (xi) reporting the results, (xii) suggesting the next experiment to perform or question to answer to further enhance the model. Note that this course will largely be project based; each student will be expected to complete each of the above steps on some real data of interest to the student. Lectures will be minimal, giving introductory explanations one day, hopefully only part of the time. The rest of the time, we will work independently or in small groups to complete the weekly portion of the overall project. Please come ready to do science! If you don't have questions that you want answered, you can work in small groups, but each student will need to write the code and reports on their own. Recommended background: No courses are formally required, though students will need to write numerical code (in R, Python, or Julia), and make reports using LaTeX, knitr, or Jupyter notebooks or similar.
Instructor(s): J. Vogelstein
Area: Engineering.

EN.580.673. Magnetic Resonance in Medicine. 3.0 Credits.
This course provides the student with a complete introduction to the physical principles, hardware design, and signal processing used in magnetic resonance imaging and magnetic resonance spectroscopy. The course is designed for students who wish to pursue research in magnetic resonance. Recommended course background: EN.580.222 or EN.520.214. Co-listed with EN.580.476.
Instructor(s): M. Schar; P. Bottomley.

EN.580.674. Introduction to Neuro-Image Processing. 3.0 Credits.
Developments in medical image acquisition systems such as magnetic resonance imaging (MRI) and computed tomography (CT) have resulted in large number of clinical images with rich information regarding structure and function of nervous system. A challenging task is to extract clinically relevant information from the raw images that can be used to characterize structural alteration of brain in disease state. This course introduces the underlying physical foundation of different image modalities that are used to study neurological disorders followed by presentation of concepts and techniques that are used to process and extract information from medical images, in particular MRI. Topics that are covered include medical image formats, enhancement, segmentation, registration, and visualization. Suggest Course Background: Mathematical Methods For Engineers or equivalent course, Signals and Systems, and Probability
Instructor(s): S. Ardekani.

EN.580.678. Biomedical Photonics. 4.0 Credits.
This course will cover the basic optics principles including geometric, beam and wave description of light. The course will also cover the basic generation and detection techniques of light and the principles of optical imaging and spectroscopy. After the basis is established, we will focus on some commonly employed optical techniques and tools for biomedical research including various optical microscopy technologies, fiber optics, Raman spectroscopy, Fluorescence (lifetime), FRAT, FRET and FCS. The recent development in tissue optics, biomedical optical imaging/ spectroscopy techniques (such as OCT, multiphoton fluorescence and harmonics microscopy, Structured Illumination, light scattering, diffuse light imaging and spectroscopy, optical molecular imaging, photo-acoustic imaging) will also be discussed. Representative biomedical applications of translational biomedical photonics technologies will be integrated into the corresponding chapters.
Instructor(s): X. Li
Area: Engineering.

EN.580.679. X-ray Imaging and Computed Tomography. 3.0 Credits.
This course provides students with an intermediate-level understanding of the physics, engineering, algorithms, and applications of medical x-ray imaging and computed tomography (CT). It is intended for senior undergraduates (EN.580.479) and/or graduate students (EN.580.679) in Biomedical Engineering, Computer Science, Electrical and Computer Engineering, or related fields in science and engineering. Topics include the physics of x-ray interaction and detection, image quality modeling and assessment, 3D image reconstruction (including analytical and iterative approaches), and applications in diagnostic and image-guided procedures. Recommended Course Background: EN.580.472 and/or EN.580.473 and familiarity with Matlab.
Instructor(s): W. Zbijewski
Area: Engineering.

EN.580.680. Precision Care Medicine. 4.0 Credits.
Precision Care Medicine is a two-semester project-based learning course. Projects will use methods of machine learning and mechanistic and statistical modeling to develop novel data-driven solutions to important health care problems that arise in anesthesiology and critical care medicine. The scope of such problems is vast, and few have been approached before. Examples include data- and modeling-driven approaches to: optimal selection of patients to be admitted to ICUs; optimal determination of when it is safe to discharge a patient from an ICU; early prediction of pending changes in the clinical state of patients in an ICU; data-driven optimal selection of patient therapy; and others. In the first semester, students will assemble into teams of 3-4, and will work with their project mentors (clinical faculty in the ACCM Department; Drs. Winslow and Sarma) to develop a project work plan. In the remainder of the course, they will apply engineering approaches to solve the important health care problems in their projects. Class time will include: lectures and tutorials covering the physiology, medicine, and engineering principles relevant to each project; project work in a setting where faculty are available to assist students with challenges. Each team will present project updates to the entire class at regular intervals so that every student becomes familiar with each project. Teams will also be charged with designing, validating and deploying a web-application that delivers the computational method for solving the underlying healthcare problem to the user. HIPAA regulations, use of human subjects data, and requirements for FDA Class II and Medical Device Data Systems approval will be covered.
Instructor(s): R. Winslow; S. Sarma.
EN.580.681. Precision Care Medicine. 3.0 Credits.
Precision Care Medicine is a two-semester project-based learning course. Projects will use methods of machine learning and mechanistic and statistical modeling to develop novel data-driven solutions to important health care problems that arise in anesthesiaiology and critical care medicine. The scope of such problems is vast, and few have been approached before. Examples include data- and modeling-driven approaches to: optimal selection of patients to be admitted to ICUs; optimal determination of when it is safe to discharge a patient from an ICU; early prediction of pending changes in the clinical state of patients in an ICU; data-driven optimal selection of patient therapy; and others. In the first semester, students will assemble into teams of 3-4, and will work with their project mentors (clinical faculty in the ACCM Department; Drs. Winslow and Sarma) to develop a project work plan. In the remainder of the course, they will apply engineering approaches to solve the important health care problems in their projects. Class time will include: lectures and tutorials covering the physiology, medicine, and engineering principles relevant to each project; project work in a setting where faculty are available to assist students with challenges. Each team will present project updates to the entire class at regular intervals so that every student becomes familiar with each project. Teams will also be charged with designing, validating and deploying a web-application that delivers the computational method for solving the underlying healthcare problem to the user. HIPAA regulations, use of human subjects data, and requirements for FDA Class II and Medical Device Data Systems approval will be covered.

EN.580.683. Nuclear Medicine Imaging. 3.0 Credits.
This course provides an intermediate-level introduction to the instrumentation, image processing and reconstruction methods used in planar nuclear medicine imaging, single-photon emission computed tomography (SPECT) and positron emission tomography (PET). Topics include radioactive decay, nuclear medicine instrumentation including radiation detectors and associated electronics, analytic and statistical iterative tomographic reconstruction, imaging physics, and image quality in the context of these three modalities. This course will be taught at the School of Medicine Campus. Recommended Course Background: EN.520.432/EN.580.472 and EN.520.434/EN.580.473
Instructor(s): A. Rahmim; B. Tsui; E. Frey; Y. Du
Area: Engineering.

EN.580.688. Foundations of Computational Biology & Bioinformatics II. 3.0 Credits.
This course will introduce probabilistic modeling and information theory applied to biological sequence analysis, focusing on statistical models of protein families, alignment algorithms, and models of evolution. Topics will include probability theory, score matrices, hidden Markov models, maximum likelihood, expectation maximization and dynamic programming algorithms. Homework assignments will require programming in Python. Recommended Course Background: Math through linear algebra and differential equations, EN.580.221 or equivalent, EN.601.226 or equivalent.
Instructor(s): R. Karchin.

EN.580.689. Computational Personal Genomics. 3.0 Credits.
What can we learn from the genome sequence of an individual? Genomic technology now makes it possible to generate huge amounts of DNA sequence data for a single individual at a relatively low cost. To make sense of this data, we need to employ sophisticated computational methods to identify genetic variations that influence an individual’s health. In this course, we will first review the state of the art in sequencing technology, and discuss how this technology is being applied to study human biology and disease. We will then explore the computational methods used to turn raw sequence data into knowledge. Topics will include genetic variant detection; discovery of chromosomal rearrangements and fusions; methods to measure gene expression from RNA; and measurements of the microbiome living inside our bodies. Recommended Course Background: EN.601.447/639, EN.600.363/463, EN.600.688, EN.580.688 (any one is sufficient), or permission of the instructor. Course is also open to undergraduate students.
Instructor(s): S. Salzberg
Area: Engineering.

EN.580.691. Learning Theory. 3.0 Credits.
This course introduces the probabilistic foundations of learning theory. We will discuss topics in regression, estimation, Kalman filters, Bayesian learning, classification, reinforcement learning, and active learning. Our focus is on iterative rather than batch methods for parameter estimation. Our aim is to use the mathematical results to model learning processes in the biological system. Recommended Course Background: Probability and Linear Algebra.
Instructor(s): R. Shadmehr.

EN.580.693. Imaging Instrumentation. 4.0 Credits.
This course is intended to introduce students to imaging instrumentation. The class will be lab-oriented, giving hands-on experience with data collection and processing using a configurable optical system. Specific topics will include the programming and control of electromechanical elements, imaging data acquisitions, image formation and processing (e.g. 3D reconstruction), and imaging system analysis and optimization. Recommended Course Background: EN.580.222 Systems and Controls or EN.520.214 Signals and Systems. Programming experience highly desirable.
Instructor(s): J. Stayman.

EN.580.694. Statistical Connectomics. 3.0 Credits.
This course will cover the basics of an exciting emerging field of statistical connectomics (aka, brain-graphs). It is so new, that we are going to make some of it up in this class! The first week will be introductory lectures that I give. The rest of the semester will be run like a seminar; each week will focus on a different topic. On Tuesdays we will hear about a statistical method that operates on graphs, and on Thursdays we will read about some neuroscience data upon which one could apply these techniques. The final project will consist of implementing a statistical method devised for graphs on a brain-graph problem. Recommended background: coursework in probability, linear algebra, and numerical programming (eg, R, Python, Matlab).
Instructor(s): J. Vogelstein
Area: Engineering.
EN.580.697. Neuro Data Science I. 4.0 Credits.
In this year long course, students will work together in small teams to design, develop, and deploy a functioning tool for practicing brain scientists, either for accelerating research or augmenting the clinic. The first semester will focus on scoping the tool, including determining feasibility (for us in a year) and significance (for the targeted brain science community), as well as a statement of work specifying deliverables and milestones. The second semester will focus on developing the tool, getting regular feedback, and iterating, using the agile/lean development process. Recommended Course Background: numerical programming.
Instructor(s): J. Vogelstein.

EN.580.701. CBID Masters Advanced Project. 3.0 - 10.0 Credits.
For second year CBID students.
Instructor(s): S. Acharya.

EN.580.702. CBID Masters Advanced Project. 3.0 - 10.0 Credits.
Instructor(s): S. Acharya.

The course introduces modern techniques in mathematical analysis of biomedical data. Techniques include maximum likelihood, estimation theory via Kalman equation, state-space models, Bayesian estimation, classification of labeled data, support vector machine, dimensionality reduction via principal component analysis, clustering, expectation maximization, and dynamic programming via the Bellman equation.
Instructor(s): R. Shadmehr.

EN.580.706. Introduction to Biomedical Rodent Surgery Laboratory and Grantsmanship. 3.0 Credits.
This course has been specifically designed for students interested in understanding the translational aspects of biomedical research and pursuing research as a career. The course aims to introduce diverse yet interlinked research concepts that will equip students with the necessary knowledge and expertise to independently carry out research endeavors in the future. A part of the course includes supervised hands-on in vivo workshops, in which students will learn basic rodent anatomy, physiology and some general experimental procedures. A second component will introduce research methodology, which will enable students to develop their scientific thought process and enhance their critical thinking skills by formulating hypothesis, developing aims, searching PubMed for related literature, understanding ethical guidelines and other regulatory issues. In today's scenario, scientists also need to have a strong communication ability to ensure that their research is accessible at a global platform. This requires skill and knowledge of scientifically drafting manuscripts, writing grants and articulating business plans as well as effectively presenting their research results (presentation, poster, etc.). We will allocate necessary time to develop this science-art as well. Students' attendance and active participation will enrich this exciting and interactive course, which is entirely based on in-class learning.
Instructor(s): A. All.

EN.580.721. Systems Bioengineering I. 4.0 Credits.
A quantitative, model-oriented investigation of the cardiovascular system. Topics are organized in three segments. (1) Molecular/cellular physiology, including electrical signaling and muscle contraction. (2) Systems cardiovascular physiology, emphasizing circuit-diagram analysis of hemodynamics. (3) Cardio-vascular horizons and challenges for biomedical engineers, including heart failure and its investigation/treatment by computer simulation, by gene-array analysis, by stem-cell technology, and by mechanical devices (left-ventricular assist and total-heart replacement). Recommended Course Background: EN.580.221 and EN.580.222
Instructor(s): N. Trayanova; R. Vidal.

EN.580.722. Systems Bioengineering II. 4.0 Credits.
A quantitative, model-oriented approach to the study of the nervous system. Topics include functional anatomy of the central and autonomic nervous systems, neurons and networks, learning and memory, structure and function of the auditory and visual systems, motor systems, and neuro-engineering. Recommended Course Background: EN.580.221, EN.580.222, EN.580.223, AS.110.302, EN.580.421; Corequisite: EN.580.424
Instructor(s): E. Haase; X. Wang.

EN.580.727. Cell Engineering and Regenerative Medicine Seminar Series. 1.0 Credit.
Top researchers from around the world will present the latest research on stem cell science and clinical application followed by discussion. School of Medicine campus: PCTB, Mountcastle Auditorium
Instructor(s): J. Elisseeff.

EN.580.728. Advanced Seminar in Chemical Glycobiology & Carbohydrate Drug Design. 1.0 Credit.
This course uses the current literature to teach advanced topics in carbohydrate engineering. Students will be required to read current papers, selected textbook chapters and online content to prepare for interactive teaching sessions with faculty and other students. Potential topics will include: sugars as information storage entities and signaling molecules; methods to manipulate and characterize complex carbohydrates in vivo, through chemoenzymatic methods, and emerging high-throughput methodology; carbohydrate-based drug development; and the role of sugars in stem cell biology and tissue engineering.
Evaluation will be both by faculty and fellow students. Graduate Level. Seniors by permission. Fall semester only.
Instructor(s): K. Yarema.

EN.580.729. Advanced Seminar in Chemical Glycobiology & Carbohydrate Drug Design. 1.0 Credit.
This course uses the current literature to teach advanced topics in carbohydrate engineering. Students will be required to read current papers, selected textbook chapters and online content to prepare for interactive teaching sessions with faculty and other students. Potential topics will include: sugars as information storage entities and signaling molecules; methods to manipulate and characterize complex carbohydrates in vivo, through chemoenzymatic methods, and emerging high-throughput methodology; carbohydrate-based drug development; and the role of sugars in stem cell biology and tissue engineering.
Evaluation will be both by faculty and fellow students. Spring semester only.
Instructor(s): K. Yarema.
EN.580.735. Advanced Seminars in Computational Medicine. 1.0 Credit.
In this course, students will review current literature on the most salient and interesting topics in the emerging field of Computational Medicine, which is focused on the development of quantitative approaches for understanding the mechanisms, diagnosis and treatment of human disease through applications of mathematics, engineering, and computational science. Whenever possible, the publications considered will be directly relevant to the lectures delivered by visiting scholars in the Institute for Computational Medicine’s seminar series. Students will be required to search for the most relevant papers in the current literature; read and critically interpret these papers; conduct interactive teaching sessions with the course instructor, other students, and trainees/faculty from the Institute. Potential topics will include: computational anatomy; computational molecular medicine; computational physiological medicine; and computational healthcare. Evaluation will be by the course instructor (pass/fail). Graduate level. Seniors by permission. All registrants must be approved by the course instructor.
Instructor(s): P. Boyle.

EN.580.736. Distinguished Seminar Series in Computational Medicine. 1.0 Credit.
We live in a new era in the understanding, diagnosis and treatment of human disease. Over the past ten years, extraordinary advances in modeling and computing technologies have opened the door to an array of possibilities that were previously beyond the reach of biomedical researchers. Today’s powerful computational platforms are allowing us to begin to identify, analyze, and compare the fundamental biological components and processes that regulate human diseases and their impact on the body. The next step, then, is to harness the potential of these theoretical and computational tools and theory in a meaningful way - that is, to apply this “new medicine” to the exploration and treatment of many of our current diseases. This lecture series will feature world experts in computational medicine as well as laboratories at JHU’s Institute for Computational Medicine (ICM). Fall semester only. S/U grading only.
Instructor(s): F. Macgabhann; S. Sarma.

EN.580.737. Distinguished Seminar Series in Computational Medicine. 1.0 Credit.
We live in a new era in the understanding, diagnosis and treatment of human disease. Over the past ten years, extraordinary advances in modeling and computing technologies have opened the door to an array of possibilities that were previously beyond the reach of biomedical researchers. Today’s powerful computational platforms are allowing us to begin to identify, analyze, and compare the fundamental biological components and processes that regulate human diseases and their impact on the body. The next step, then, is to harness the potential of these theoretical and computational tools and theory in a meaningful way - that is, to apply this “new medicine” to the exploration and treatment of many of our current diseases. This lecture series will feature world experts in computational medicine as well as laboratories at JHU’s Institute for Computational Medicine (ICM). Spring semester only.
Instructor(s): F. Macgabhann; S. Sarma.

EN.580.738. Advanced Seminars in Cardiac Electrophysiology and Mechanics. 1.0 Credit.
This course uses the current literature to teach advanced topics in cardiac electrophysiology and mechanics. Students will be required to read current articles and then conduct interactive teaching sessions with faculty and other students. Potential topics will include: ion channels, cardiac excitation-contraction coupling, myofilament regulation, cardiac arrhythmias, heart failure, therapies for arrhythmias and pump dysfunction. Evaluation will be both by faculty and fellow students. Graduate Level. Seniors by permission. Fall semester only.
Instructor(s): N. Trayanova; P. Boyle.

EN.580.739. Advanced Seminars in Cardiac Electrophysiology and Mechanics. 1.0 Credit.
This course uses the current literature to teach advanced topics in cardiac electrophysiology and mechanics. Students will be required to read current articles and then conduct interactive teaching sessions with faculty and other students. Potential topics will include: ion channels, cardiac excitation-contraction coupling, myofilament regulation, cardiac arrhythmias, heart failure, therapies for arrhythmias and pump dysfunction. Evaluation will be both by faculty and fellow students. Graduate Level. Seniors by permission only (signed add/drop form). Spring semester only.
Instructor(s): N. Trayanova; P. Boyle.

EN.580.740. Surgery For Engineering. 3.0 Credits.
This course provides an introduction to basic principles and emerging techniques in surgery, interventional radiology, and radiation therapy for engineering students. Basic principles include introduction to fundamental surgical approaches and tools as well as sub-specialties, including neurosurgery, orthopaedic surgery, ENT surgery, thoracic surgery, and laparoscopic surgery as well as minimally invasive (body and neurovascular) interventional radiology as well as radiotherapy (external beam and brachytherapy). Introduction to cutting edge and emerging technologies include intraoperative imaging (all modalities), surgical navigation, and robotics. Requisite background for engineering students includes analytic geometry, linear algebra, computing (Matlab, Python, or C++), and basic familiarity with the physics of medical imaging. Safety Training: certificate in Bloodborne Pathogens and HIPAA & Research. Recommended course background: 580.472, 601.455
Instructor(s): J. Siewerdsen.

EN.580.741. Models of Cardiac Electrophysiology and Arrhythmia. 1.0 Credit.
This course will cover the fundamentals of different experimental and computational models of cardiac electrophysiology and when particular models are appropriate for use. Students will be required to read review articles and engage in interactive discussion with faculty and other students, with some projects and presentations to reinforce important concepts. Topics will include measurement of cardiac electrical signals, stimulation of cardiac tissue, single cell and tissue level electrical properties, excitation-contraction coupling, and mechanisms of arrhythmia. Seniors by permission.
Instructor(s): L. Tung.
EN.580.742. Neural Implants and Interfaces. 3.0 Credits.
This course will focus on invasive neural implants that electrically interface with the peripheral or central nervous system. We will investigate the different types of recording and stimulating neural interface technologies currently in use in patients as well as coverage of the biophysics, neural coding, and hardware. We will also cover computational modeling of neurophysiology in the context of implantable devices and their neural interfaces. A final group project will be required for simulating a neural interface system. Recommended course background includes cell biology, physics with electromagnetics (or electrical circuits), chemistry, differential equations, and computer programming.
Instructor(s): G. Fridman.

EN.580.745. Mathematics of Deep Learning. 1.5 Credits.
The past few years have seen a dramatic increase in the performance of recognition systems thanks to the introduction of deep networks for representation learning. However, the mathematical reasons for this success remain elusive. For example, a key issue is that the training problem is nonconvex, hence optimization algorithms are not guaranteed to return a global minima. Another key issue is that while the size of deep networks is very large relative to the number of training examples, deep networks appear to generalize very well to unseen examples and new tasks. This course will overview recent work on the theory of deep learning that aims to understand the interplay between architecture design, regularization, generalization, and optimality properties of deep networks.
Instructor(s): R. Vidal.

EN.580.746. Imaging Science Seminar. 1.0 Credit.
Fall semester only.
Instructor(s): M. Miller; R. Vidal.

EN.580.747. Imaging Science Seminar. 1.0 Credit.
Spring semester only.
Instructor(s): M. Miller; R. Vidal.

EN.580.748. Advanced Seminars in Magnetic Resonance Imaging. 3.0 Credits.
This course uses the current literature to teach advanced topics in magnetic resonance imaging. Students will be required to read current papers, selected textbook chapters and online content to prepare for interactive teaching sessions with faculty and other students. Potential topics will include: image artifacts, effect of motion, resolution and SNR, realtime imaging, clinical applications. Evaluation will be both by faculty and fellow students. Graduate Level. Seniors by permission. Fall semester only.
Instructor(s): E. McVeigh.

EN.580.749. Advanced Seminars in Magnetic Resonance Imaging. 3.0 Credits.
This course uses the current literature to teach advanced topics in magnetic resonance imaging. Students will be required to read current papers, selected textbook chapters and online content to prepare for interactive teaching sessions with faculty and other students. Potential topics will include: image artifacts, effect of motion, resolution and SNR, realtime imaging, clinical applications. Evaluation will be both by faculty and fellow students. Spring semester only.
Instructor(s): D. Herzka.

EN.580.751. Cell & Tissue Engineering Lab. 4.0 Credits.
Cell and tissue engineering is a field that relies heavily on experimental techniques. This laboratory course will consist of three six experiments that will provide students with valuable hands-on experience in cell and tissue engineering. Students will learn specialized techniques related to faculty expertise in cell engineering, microfluidics, gene therapy, microfabrication and cell encapsulation. Experiments include the basics of cell culture techniques, gene transfection and metabolic engineering, basics of cell-substrate interactions I, cell-substrate interactions II, and cell encapsulation and gel contraction. This course includes an 'advanced topics' component designed to fulfill toe core curriculum requirements of the RIE (Regenerative and Immune Engineering) track of the BME masters program. Offered the first half of fall semester only.
Instructor(s): E. Haase; K. Yarema.

EN.580.771. Principles of the Design of Biomedical Instrumentation. 4.0 Credits.
This course is designed for graduate students interested in learning basic biomedical instrumentation design concepts and translating these into advanced projects based on their research on current state-of-the-art. They will first gain the basic knowledge of instrumentation design, explore various applications, and critically gain hands-on experience through laboratory and projects. At the end of the course, students would get an excellent awareness of biological or clinical measurement techniques, design of sensors and electronics (or electromechanical/ chemical, microprocessor system and their use). They will systematically learn to design instrumentation with a focus on the use of sensors, electronics to design a core instrumentation system such as an ECG amplifier. Armed with that knowledge and lab skills, students will be encouraged to discuss various advanced instrumentation applications, such as brain monitor, pacemaker/defibrillator, or prosthetics. Further, they will be "challenged" to come up with some novel design ideas and implement them in a semester-long design project. Students will take part in reading the literature, learning about the state-of-the-art through journal papers and patents, and discussing, critiquing, and improving on these ideas. Finally, they will be implementing a selected idea into a semester-long advanced group project. Meets with 580.471 Graduate students only
Instructor(s): N. Thakor.

EN.580.773. Modern Biomedical Imaging Instrumentation and Techniques. 3.0 Credits.
An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is team taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern biomedical imaging equipment in clinical and research settings. Recommended course background:
EN.520.432 or EN.580.472
Prerequisites: Students may not have taken EN.580.473.
Instructor(s): B. Tsui
Area: Engineering.
EN.580.779. Systems Bioengineering III. 4.0 Credits.
Computational and theoretical systems biology at the cellular and molecular level. Topics include organizational patterns of biological networks; analysis of metabolic networks, gene regulatory networks, and signal transduction networks; inference of pathway structure; and behavior of cellular and molecular circuits. Recommended Course Background: EN.580.221 and EN.580.222 or Permission Required. Instructor(s): J. Bader.

EN.580.781. Biomedical Engineering Seminar. 1.0 Credit.
Instructor(s): W. Grayson.
EN.580.782. Biomedical Engineering Seminar. 1.0 Credit.
Instructor(s): W. Grayson.
EN.580.788. Biomedical Photonics II. 4.0 Credits.
This course serves as the continuation of 580.678 (520.678), Biomedical Photonics I. It will cover the advanced topics on biomedical photonics, including, but not limited to, light scattering (Rayleigh and Mie scattering), photon diffusion, polarization (birefringence), fluorescence, lifetime measurements, confocal microscopy, optical coherence tomography, nonlinear microscopy, and super-resolution microscopy. Representative biomedical applications of some of these technologies will be integrated into the relevant chapters. A hand-on lab section (optional) for students to design and build an imaging instrument, space permitting.
Instructor(s): X. Li.

EN.580.791. Biomedical Engineering Project Design and Proposal Development I. 2.0 Credits.
The goal of this class is to provide students with experience in designing and implementing a biomedical engineering research project. Students will select a laboratory to host their research rotation within the first two weeks (ideally, before the start of the term) and will participate in lab-related activities for a minimum of 6 hours a week that involve “in person” interaction between the PI or other members of the sponsoring lab and the student. Activities will include attendance at lab meetings, preparation of a research proposal, and “hands on” experimental, computational, or modeling tasks. In addition, attendance at research seminars and class meetings is expected. Finally, periodic reports on your research project and progress, as well providing feedback on your ‘colleagues’ projects and proposals will also be expected. A final research proposal (to be presented in the format of a NIH R21-type grant application) will provide evidence that a student is capable of carrying out advanced research by identifying a significant biomedical problem, developing innovative approaches to solve it, and then designing a relevant and implementable research plan.
Instructor(s): K. Yarema.

EN.580.821. Applied Research and Grant Methodology I. 3.0 Credits.
Students will select a laboratory to host their research rotation within the first two weeks (ideally, before the start of the term) and will participate in lab-related activities for a minimum of 12 hours a week; at least 6 hours a week is expected to involve “in person” interaction between the PI or other members of the sponsoring lab and the student. Activities will include attendance at lab meetings, preparation of a research proposal, and “hands on” experimental, computational, or modeling tasks: in addition, attendance at department research seminars and class meetings is required. Periodic reports on your research proposal/project and progress, as well providing feedback on your ‘colleagues’ projects and proposals will also be expected. A final research proposal (to be presented in the format of a NIH F31 (or NSF equivalent) grant application will be required (it is expected that the application will be submitted to the funding agency for students interested in continuing their research career); it is anticipated that this proposal will include data generated by the student over the Fall, Interim session, or Spring term(s).
Prerequisites: EN.580.821 OR EN.580.706
Instructor(s): K. Yarema.

EN.580.780. BME MSE Research Practicum. 6.0 Credits.
BME MSE Research Practicum For Thesis-Track Students
Instructor(s): K. Yarema.

Cross Listed Courses
General Engineering
EN.500.112. Gateway Computing. 3.0 Credits.
This course introduces fundamental programming concepts and techniques, and is intended for all who plan to develop computational artifacts or intelligently deploy computational tools in their studies and careers. Topics covered include the design and implementation of algorithms using variables, control structures, arrays, functions, files, testing, debugging, and structured program design. Elements of object-oriented programming, algorithmic efficiency and data visualization are also introduced. Students deploy programming to develop working solutions that address problems in engineering, science and other areas of contemporary interest that vary from section to section. Course homework involves significant programming. Attendance and participation in class sessions are expected.
Instructor(s): I. Sekyonda; J. Selinski; M. Darvish Darab
Area: Engineering, Natural Sciences.
EN.500.745. Seminar in Computational Sensing and Robotics. 1.0 Credit.
Seminar series in robotics. Topics include: Medical robotics, including computer-integrated surgical systems and image-guided intervention. Sensor based robotics, including computer vision and biomedical image analysis. Algorithmic robotics, robot control and machine learning. Autonomous robotics for monitoring, exploration and manipulation with applications in home, environmental (land, sea, space), and defense areas. Biорobotics and neuromechanics, including devices, algorithms and approaches to robotics inspired by principles in biomechanics and neuroscience. Human-machine systems, including haptic and visual feedback, human perception, cognition and decision making, and human-machine collaborative systems. Cross-listed Mechanical Engineering, Computer Science, Electrical and Computer Engineering, and Biomedical Engineering.
Instructor(s): L. Whitcomb; P. Kazanzides.

Electrical Computer Engineering
EN.520.315. Intro. to Bio-Inspired Processing of Audio-Visual Signals. 3.0 Credits.
An introductory course to basic concepts of information processing of human communication signals (sounds, images) in living organisms and by machine. Recommended Course Background: EN.520.214 (or EN.580.222) or consent of the instructor.
Instructor(s): H. Hermansky
Area: Engineering.

EN.520.434. Modern Biomedical Imaging Instrumentation and Techniques. 3.0 Credits.
An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is team taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern biomedical imaging equipments in clinical and research settings. Co-listed with EN.580.473
Prerequisites: Students may not have taken EN.520.634
Instructor(s): B. Tsui.

EN.520.445. Audio Signal Processing. 3.0 Credits.
This course gives a foundation in current audio and speech technologies, and covers techniques for sound processing by processing and pattern recognition, acoustics, auditory perception, speech production and synthesis, speech estimation. The course will explore applications of speech and audio processing in human computer interfaces such as speech recognition, speaker identification, coding schemes (e.g. MP3), music analysis, noise reduction. Students should have knowledge of Fourier analysis and signal processing.
Prerequisites: Students make take EN.520.445 or EN.520.645, but not both.
Instructor(s): M. Elhilali
Area: Engineering.

EN.520.622. Principles of Complex Networked Systems. 3.0 Credits.
By employing fundamental concepts from diverse areas of research, such as statistics, signal processing, biophysics, biochemistry, cell biology, and epidemiology, this course introduces a multidisciplinary and rigorous approach to the modeling and computational analysis of complex interaction networks. Topics to be covered include: overview of complex nonlinear interaction networks and their applications, graph-theoretic representations of network topology and stoichiometry, stochastic modeling of dynamic processes on complex networks and master equations, Langevin, Poisson, Fokker-Plank, and moment closure approximations, exact and approximate Monte Carlo simulation techniques, time-scale separation approaches, deterministic and stochastic sensitivity analysis techniques, network thermodynamics, and reverse engineering approaches for inferring network models from data.
Instructor(s): J. Goutsias.

Mechanical Engineering
EN.530.410. Biomechanics of the Cell. 3.0 Credits.
Mechanical aspects of the cell are introduced using the concepts in continuum mechanics. Discussion of the role of proteins, membranes and cytoskeleton in cellular function and how to describe them using simple mathematical models.
Instructor(s): S. Sun
Area: Engineering, Natural Sciences.

EN.530.426. Biofluid Mechanics. 3.0 Credits.
Course will cover selected topics from physiological fluid dynamics, including respiratory flow patterns, blood flow and pulse propagation, aerodynamics of phonation and speech, rheology of blood flow in the microcirculation, aquatic animal propulsion, and animal flight.
Instructor(s): R. Mittal
Area: Engineering.

EN.530.448. Biosolid Mechanics. 3.0 Credits.
This class will introduce fundamental concepts of statics and solid mechanics and apply them to study the mechanical behavior bones, blood vessels, and connective tissues such as tendon and skin. Topics to be covered include concepts of small and large deformation, stress, constitutive relationships that relate the two, including elasticity, anisotropy, and viscoelasticity, and experimental methods. Recommended Course Background: AS.110.201 and AS.110.302, as well as a class in statics and mechanics
Instructor(s): T. Nguyen
Area: Engineering.
APPLIED MATHEMATICS STATISTICS

EN.553.450. Computational Molecular Medicine. 4.0 Credits.
Computational systems biology has emerged as the dominant framework for analyzing high-dimensional "omics" data in order to uncover the relationships among molecules, networks and disease. In particular, many of the core methodologies are based on statistical modeling, including machine learning, stochastic processes and statistical inference. We will cover the key aspects of this methodology, including measuring associations, testing multiple hypotheses, and learning predictors, Markov chains and graphical models. In addition, by studying recent important articles in cancer systems biology, we will illustrate how this approach enhances our ability to annotate genomes, discover molecular disease networks, detect disease, predict clinical outcomes, and characterize disease progression. Whereas a good foundation in probability and statistics is necessary, no prior exposure to molecular biology is required (although helpful).
Prerequisites: (EN.553.420 OR EN.553.620) AND (EN.553.430 OR EN.553.630) OR equivalent courses in probability and statistics. Students may receive credit for EN.550.450/EN.553.450 or EN.553.650, but not both.
Instructor(s): D. Geman; J. Bader
Area: Engineering, Quantitative and Mathematical Sciences.

EN.553.650. Computational Molecular Medicine. 4.0 Credits.
Computational systems biology has emerged as the dominant framework for analyzing high-dimensional "omics" data in order to uncover the relationships among molecules, networks and disease. In particular, many of the core methodologies are based on statistical modeling, including machine learning, stochastic processes and statistical inference. We will cover the key aspects of this methodology, including measuring associations, testing multiple hypotheses, and learning predictors, Markov chains and graphical models. In addition, by studying recent important articles in cancer systems biology, we will illustrate how this approach enhances our ability to annotate genomes, discover molecular disease networks, detect disease, predict clinical outcomes, and characterize disease progression. Whereas a good foundation in probability and statistics is necessary, no prior exposure to molecular biology is required (although helpful). Recommended Course Background: EN.553.620 AND EN.553.630.
Prerequisites: Students may receive credit for EN.550.450/EN.553.450 or EN.553.650, but not both.
Instructor(s): D. Geman
Area: Engineering, Quantitative and Mathematical Sciences.

COMPUTER SCIENCE

EN.601.450. Introduction to Genomic Research. 3.0 Credits.
This course will use a project-based approach to introduce undergraduates to research in computational biology and genomics. During the semester, students will take a series of large data sets, all derived from recent research, and learn all the computational steps required to convert raw data into a polished analysis. Data challenges might include the DNA sequences from a bacterial genome project, the RNA sequences from an experiment to measure gene expression, the DNA from a human microbiome sequencing experiment, and others. Topics may vary from year to year. In addition to computational data analysis, students will learn to do critical reading of the scientific literature by reading high-profile research papers that generated groundbreaking or controversial results. [Applications] Recommended Course Background: Knowledge of the Unix operating system and programming expertise in a language such as Perl or Python.
Instructor(s): S. Salzberg
Area: Engineering.

EN.601.448. Computational Genomics: Data Analysis. 3.0 Credits.
Genomic data has the potential to reveal causes of disease, novel drug targets, and relationships among genes and pathways in our cells. However, identifying meaningful patterns from high-dimensional genomic data has required development of new computational tools. This course will cover current approaches in computational analysis of genomic data with a focus on statistical methods and machine learning. Topics will include disease association, prediction tasks, clustering and dimensionality reduction, data integration, and network reconstruction. There will be some programming and a project component. [Applications] Prerequisites: EN.601.226 or other programming experience, probability and statistics, linear algebra or calculus.
Prerequisites: Students may receive credit for EN.600.438 or EN.600.638, but not both.
Instructor(s): A. Battle
Area: Engineering.

EN.601.461. Computer Vision. 3.0 Credits.
This course gives an overview of fundamental methods in computer vision from a computational perspective. Methods studied include: camera systems and their modeling, computation of 3-D geometry from binocular stereo, motion, and photometric stereo; and object recognition. Edge detection and color perception are covered as well. Elements of machine vision and biological vision are also included. [Applications] Prerequisites: intro programming, linear algebra, and prob/stat.
Prerequisites: Students may receive credit for only one of EN.600.361, EN.600.461, EN.600.661, EN.601.461, EN.601.661.
Instructor(s): H. Ali
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.476. Machine Learning: Data to Models. 3.0 Credits.
How can robots localize themselves in an environment when navigating? Can we predict which patients are at greatest-risk for complications in the hospital? Which movie should I recommend to this user given his history of likes? Many such big data questions can be answered using the paradigm of probabilistic models in machine learning. These are especially useful when common off-the-shelf algorithms such as support vector machines and k-means fail. You will learn methods for clustering, classification, structured prediction, recommendation and inference. We will use Murphy's book, Machine Learning: a Probabilistic Perspective, as the text for this course. Assignments are solved in groups of size 1-3 students. The class will have 4 interactive sessions during which we brainstorm how to solve example open-ended real-world problems with the tools learnt in class. Students are also required to do a project of their choice within which they experiment with the ideas learnt in class. [Analysis or Applications] Prerequisites include Intro Prob/Stat, Linear Algebra and Intro Machine Learning as well as strong background in stats.
Instructor(s): S. Saria
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.748. Computational Genomics: Data Analysis. 3.0 Credits.
Graduate level version of EN.601.448. [Applications] Recommended Course Background: EN.601.226 or other programming experience, probability and statistics, linear algebra or calculus. Students may receive credit for EN.601.448 or EN.601.748 but not both.
Prerequisites: Students may receive credit for EN.600.438 or EN.600.638, but not both.
Instructor(s): A. Battle
Area: Engineering.
EN.601.776. Machine Learning: Data to Models. 3.0 Credits.
Students in the class will be asked to do assignments in Matlab. Matlab is typically easy to pick up if one is already familiar with a different programming language. Students are expected to be mathematically mature. One should have taken at least an introductory course in probability theory and linear algebra. Though not required, exposure to optimization or machine learning is recommended. Proficiency in at least one programming language is expected. When in doubt, send the instructor a copy of your transcript to see if the class is appropriate for you. Also, sit through the first few sessions and first homework to get a sense of fit. Requistes include Intro Prob/Stat, Linear Algebra and Intro Machine Learning as well as strong background in s.
Instructor(s): S. Saria.

Center for Leadership Education
https://engineering.jhu.edu/cle/

The Center for Leadership Education (CLE) at Johns Hopkins is comprised of several academic programs including the Entrepreneurship and Management minor, the Marketing and Communications minor, the Professional Communication Program, the Professional Development Program and the Masters of Science in Engineering Management. Additionally, the CLE hosts a variety of experiential programs that offer students an opportunity to gain real-world business and leadership experience.

CLE Experiential Programs Include
Competitions and Other Educational Opportunities:

• The Annual JHU Business Plan Competition: Students compete for cash prizes for best business plans in several different categories. The competition is open to students from all divisions of the university. http://bpc.jhu.edu

• Elevator Pitch Competition: AKPsi runs this event, supported by the CLE, giving students the opportunity to compete for cash prize for the best elevator pitch. The competition is open to undergraduates from the Homewood Campus. Students will submit their 90 second video pitch. The selected finalists will then present before a judging panel.

• Consulting Club Case Competition: The Johns Hopkins Undergraduate Case Competition provides students with the opportunity to learn, collaborate and share ideas with their peers in order to solve a real world business case. The competition is designed to not only develop their professional, communication and business acumen but also to connect students with Hopkins alumni in the consulting industry.

• Internships: Students can apply for sponsorship for academic credit of unpaid business-related internships during the spring, summer or fall semester.

• Intersession Courses: including P.R. and Media in the Big Apple, featuring a two-day visit to P.R. firms in NYC.

Professional Associations:

• American Marketing Association Student Chapter: Students run a chapter of this national marketing organization. https://engineering.jhu.edu/cle/beyond-the-classroom/professional-associations/

Social Entrepreneurship:

• Students Consulting for Non-Profit Organizations: A national organization of undergraduate students committed to developing communities through pro bono consulting engagements with non-profit organizations. https://johnshopkins.campuslabs.com/engage/organization/scno

• TCO: A non-profit organization focused on fostering entrepreneurship at JHU and getting students involved in Baltimore’s innovation community. https://tcolabs.org/

Other Experiential Opportunities:

• Hopkins Student Enterprises: Students have the ability start and manage businesses that provide services to the campus and surrounding communities. HSE currently has 8 successful student run business serving the Homewood Campus. http://hse.jhu.edu

• JHU TAMID: JHUTAMID provides undergraduate students with an education on the Israeli and American economies. Members of JHUTAMID will have the unique opportunity to consult for major Israeli tech firms and help run an investment fund that specializes in the Tel Aviv Stock Exchange. http://jhatamid.johnshopkins.edu

• JHU Undergraduate Consulting Club: JHUC’s aim is to help the undergraduate student body at Johns Hopkins learn more about consulting as a career track, by providing events and resources that will give students insight into the field of consulting and connect them with recruiters from firms. https://www.facebook.com/jhucc

• Marshal Salant Student Investment Team: The team was founded with a generous $100K donation by alumnus Marshal L. Salant. The team portfolio is currently valued at over $250K. Profits from the portfolio are used to fund student scholarships. https://engineering.jhu.edu/cle/beyond-the-classroom/marshal-l-salant-student-investment-team/

• Business Roundtable: Alpha Kappa Psi, Students Consulting for Nonprofit Organizations (SCNO), and the American Marketing Association (AMA) co-host this annual networking event every November. This event allows undergraduates to network with JHU alumni who are currently working in fields such as consulting, finance, and marketing. The event is set up in a roundtable format to allow students to connect with alumni on a more personal level in which students are able to ask alumni questions about their experiences in their respective industries.

• Women in Business: Women in Business (WIB) provides the women of Hopkins the opportunities necessary to advance their professional and personal development. https://alumni.jhu.edu/affinitygroups/womeninbusiness

For current faculty and contact information go to https://engineering.jhu.edu/cle/faculty/

Faculty
Director
Pamela Sheff
Director of Center for Leadership Education and Master of Science in Engineering Management Program & Senior Lecturer

Program Directors
Lawrence Aronhime
Senior Lecturer & Director of International Programs: accounting, finance, entrepreneurship, technology commercialization.

Annette Leps
Senior Lecturer & Director of Entrepreneurship & Management Program: accounting, finance, management

Julie Reiser
Senior Lecturer & Director of The Professional Communication Program: technical communication, oral presentations, research writing, dissertation writing, American literature and critical theory.

Eric Rice
Senior Lecturer & Director of Graduate Programs: organizational behavior, social entrepreneurship, management, negotiation and conflict management, leadership, public speaking, professional writing.

William Smedick
Senior Lecturer. Leadership Programs

Full Time Faculty
Illysa Izenburg
Lecturer: engineering management

Leslie Kendrick
Senior Lecturer: marketing strategy, integrated marketing communications, sports marketing, international marketing.

Charlotte O'Donnell
Lecturer: oral presentations, professional communication, visual rhetoric

Trevor Mackesey
Lecturer: professional writing and communication

Part Time Faculty
Michael Agronin
Lecturer: product development

Jennifer Bernstein
Lecturer: communications

Alexander Cocron
Lecturer: management and technology consulting

Sue Conley
Lecturer: marketing

Laura Davis
Lecturer: communications, ESL

Kevin Dungey
Senior Lecturer: communications

David Fisher
Lecturer: business law

Mark Franceschini
Senior Lecturer: business ethics, internet law

Sean Furlong
Lecturer: accounting

Guido Galvez
Lecturer: business law

Jason Heiserman
Lecturer: communications

Chris Jeffers
Lecturer: business law, patent & IP law

Andrew Kulanko
Senior Lecturer: communications

Denise Link-Farajali
Lecturer: communications, ESL

David Long
Lecturer: management and technology consulting

Dave Mahoney
Lecturer: marketing

Marco Priolo
Lecturer: accounting, finance

Bryan Rakes
Lecturer: business law

Joshua Reiter
Senior Lecturer: business process, quality management

Douglas Sandhaus
Senior Lecturer: business ethics, internet law

Adam Trieser
Lecturer: business analytics

Caroline Wilkins
Lecturer: communications

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

EN.660.100. Hopkins Leadership Challenge Seminar. 1.0 Credit.
The Hopkins Leadership Challenge seminar is designed specifically for all incoming freshman. The classroom content will include discussions with current university leaders and will serve as an introduction to the history, services and involvement opportunities open to JHU undergraduates. The seminars will include discussion and assignments from The Leadership Challenge by Kouzes and Posner. The experiential component of the course will include programs designed to enhance classroom content and expose students to the on campus and off campus involvement opportunities available.
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.660.104. Exploring Leadership: For Hopkins Students Who Want to Make a Difference. 1.0 Credit.
Seminar is designed specifically for second year undergraduates at JHU and is limited to that population. An eight-week seminar and experiential program designed to provide the following learning outcomes for students enrolled: 1. Understand self-others and how to work effectively in communities 2. Understand the importance of integrity, moral purpose, and positive change. 3. Understand how change occurs and why people resist or promote change. 4. Understand the importance of enhancing and applying individual team strengths, developing greater levels of well being for you and in others, and thriving together as individuals and organizations. 5. Form positive connections and relationships with upper class students and alumni in areas of career interests. Sophomores only. S/U only.
Instructor(s): Staff.
EN.660.105. Introduction to Business. 4.0 Credits.
This course is designed as an introduction to the terms, concepts, and values of business and management. The course comprises three broad categories: the economic, financial, and corporate context of business activities; the organization and management of business enterprises; and, the marketing and production of goods and services. Topic specific readings, short case studies and financial exercises all focus on the bases for managerial decisions as well as the long and short-term implications of those decisions in a global environment. No audits.
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.660.106. Clark Scholars Leadership Challenge. 1.0 Credit.
The Clark Scholars Leadership Challenge is a one credit pass/fail seminar and is designed specifically for the Clark Scholars at JHU who are interested in developing their leadership skills and applying those skills to Hopkins life. The seminar includes both a classroom component and an experiential component. The classroom content includes leadership topics, discussions with university leaders and serves as an introduction to the history, services and involvement opportunities at Hopkins. The experiential component includes programs such as JHU history, faculty student interaction, visits to other JHU campuses and more! Clark Scholars only. S/U only.
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.660.107. Leadership Concepts. 1.0 Credit.
Leadership Concepts is a seminar designed specifically for second year undergraduates at JHU and is limited to that population. A seven-week seminar and experiential program designed to provide the following learning outcomes for students enrolled: 1. Understand self-others and how to work effectively in communities. 2. Understand the importance of integrity, moral purpose, and positive change. 3. Understand how change occurs and why people resist or promote change. 4. Understand the importance of enhancing and applying individual team strengths, developing greater levels of well being for you and in others, and thriving together as individuals and organizations. 5. Form positive connections and relationships with upper class students and alumni in areas of career interests.
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.660.111. Civic Engagement Service and Leadership. 1.0 Credit.
Civic Engagement Service and Leadership is a seminar designed specifically for first and second year undergraduates at JHU and is limited to that population. A seven-week seminar and experiential program designed to provide the following learning outcomes for students enrolled: 1. Understand self-others and how to work effectively in communities. 2. Understand the importance of integrity, moral purpose, and positive change. 3. Understand how change occurs and why people resist or promote change. 4. Understand the importance of enhancing and applying individual team strengths, developing greater levels of well being for you and in others, and thriving together as individuals and organizations. 5. Form positive connections and relationships with upper class students and alumni in areas of career interests.
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.660.200. Principles of Finance. 3.0 Credits.
This course covers central issues in financial management and corporate finance. Students will learn how financial managers make investment, financing and other decisions and what are the tools they use to reach such decisions. Topics covered include time value of money, risk, valuation, capital structure, capital budgeting, dividend policy and mean-variance portfolio selection. The course provides the analytical tools and the financial theories needed to implement sound financial decisions within a corporation (and outside of a corporation). Ideas are presented in a cohesive way within the framework of the no-arbitrage principle, the fundamental principle shaping all aspects of modern finance. Command of the subject is crucially important for anyone considering a career not only in investment banking, investment management or trading, but also in general management, corporate strategy, management consulting, entrepreneurship, and the non-profit world.
Prerequisites: EN.660.105 OR AS.180.102
Instructor(s): Staff.

EN.660.203. Financial Accounting. 3.0 Credits.
The course in Financial Accounting is designed for anyone who could be called upon to analyze and/or communicate financial results and/or make effective financial decisions in a for-profit business setting. No prior accounting knowledge or skill is required for successful completion of this course. Because accounting is described as the language of business, this course emphasizes the vocabulary, methods, and processes by which all business transactions are communicated. The accounting cycle, basic business transactions, internal controls, and preparation and understanding of financial statements including balance sheets, statements of income and cash flows are covered. No audits.
Instructor(s): Staff.

EN.660.250. Principles Of Marketing. 3.0 Credits.
This course explores the role of marketing in society and within the organization. It examines the process of developing, pricing, promoting and distributing products to consumer and business markets and shows how marketing managers use the elements of the marketing mix to gain a competitive advantage. Through interactive, application-oriented exercises, case videotapes, a guest speaker (local marketer), and a group project, students will have ample opportunity to observe key marketing concepts in action. The group project requires each team to research the marketing plan for an existing product of its choice. Teams will analyze what is currently being done by the organization, choose one of the strategic growth alternatives studied, and recommend why this alternative should be adopted. The recommendations will include how the current marketing plan will need to be modified in order to implement this strategy and will be presented to the instructor in written form and presented to the class. No audits.
Instructor(s): Staff.

EN.660.270. Clark Scholar Engineering Design I. 1.0 Credit.
In this course, Clark Scholar students will learn and practice the first stages of design thinking. Students will engage with both industry and academic professionals to identify new innovation targets for future design projects. Additional topics will include multifaceted problem assessment and project selection for Engineering Design II.
Instructor(s): Staff.
EN.660.300. Managerial Finance. 3.0 Credits.
This course is designed to familiarize the student with the basic concepts and techniques of financial management practice. The course begins with a review of accounting, securities markets, and the finance function. The course then moves to discussion of financial planning, financial statement analysis, time value of money, interest rates and bond valuation, stock valuation, and concludes with capital budgeting and project analysis. A combination of classroom discussions, problem sets, and case studies will be used. No audits.
Prerequisites: EN.660.203
Instructor(s): Staff.

EN.660.303. Managerial Accounting. 3.0 Credits.
This course introduces management accounting concepts and objectives including planning, control, and the analysis of sales, expenses, and profits. Major topics include cost behavior, cost allocation, product costing (including activity based costing), standard costing and variance analysis, relevant costs, operational and capital budgeting, and performance measurement. Note: not open to students who have taken EN.660.204 Managerial Accounting. No audits.
Prerequisites: EN.660.203
Instructor(s): Staff.

EN.660.308. Business Law I. 3.0 Credits.
This course is designed to provide students an introduction to legal reasoning and analysis. Content distinguishes forms of business, civil versus criminal law, and agency principles; intellectual property concepts, contract Law, the UCC (Uniform Commercial Code) and consumer protection are explored and discussed in the context of assigned legal cases which are intended to develop a student’s ability to analyze and apply law. Note: not open to students who have taken 660.205 Business Law I. No audits.
Prerequisites: EN.660.105
Instructor(s): Social and Behavioral Sciences.

EN.660.309. Case Studies in Business Ethics. 3.0 Credits.
This course is designed as a workshop using case studies to introduce students to the ethical concepts that are relevant to resolve moral issues in contemporary business and social settings—both global and personal in nature. Students will learn the reasoning and analytical skills needed to apply ethical concepts to their own decision-making, to identify moral issues involved in the management of specific problem areas in business and society, and to understand the social and natural environments which give rise to moral issues. The course focus is on performance articulated by clear reasoning and effective verbal and written communication concerning ethical issues in business and society. Not open to students who have taken EN.660.231 Case Studies in Business Ethics. No audits.
Prerequisites: EN.660.105
Instructor(s): Staff
Area: Humanities.

EN.660.311. Law and the Internet. 3.0 Credits.
Sometimes called “Cyber law” this course uses the case study method to examine some of the most significant and compelling legal aspects, issues, and concerns involved with operating a business enterprise in an Internet environment. Some of the issues likely to be covered include jurisdiction, resolution of online disputes, trademarks, copyright, licenses, privacy, defamation, obscenity, the application of traditional concepts of tort liability to an Internet context, computer crime, information security, taxation, international considerations, and an analysis of other recent litigation and/or statutes. Pre-requisite of EN.660.205 or EN.660.308 or by permission of instructor. Note: not open to students who have taken EN.660.306 Law and the Internet. No audits.
Prerequisites: EN.660.205 OR EN.660.308
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.660.329. Social Entrepreneurship Theory and Practice. Community Based Learning. 3.0 Credits.
Learn the principles, values and skills necessary to lead and succeed in organizations that make a positive difference in today’s world. The course is designed to help students identify and provide opportunities to enhance their leadership skills. A “Blueprint for Success” will provide the framework for students to cultivate their own ideas for new socially conscious entrepreneurial ventures. Students will hear from successful current leaders in the field of social entrepreneurship and be provided the opportunity to network with JHU alumni, faculty and staff who are working or volunteering in for-profit or non-profit entities through occupations that make a difference.
Instructor(s): Staff
Area: Social and Behavioral Sciences Writing Intensive.

EN.660.331. Leading Teams. 3.0 Credits.
This course will allow students to develop the analytical skills needed to effectively lead and work in teams. Students will learn tools and techniques for problem solving, decision-making, conflict resolution, task management, communications, and goal alignment in team settings. They will also learn how to measure team dynamics and performance, and assess methods for building and sustaining high-performance teams. Students will also explore their own leadership, personality and cognitive styles and learn how these may affect their performance in a team. The course will focus on team-based experiential projects and exercises as well as provide opportunities to individually reflect and write about the concepts explored and skills gained throughout the course. No Audits. Recommended Course Background: EN.660.332 or EN.660.333.
Instructor(s): Staff.

EN.660.332. Leadership Theory. 3.0 Credits.
Students will be introduced to the history of Leadership Theory from the “Great Man” theory of born leaders to Transformational Leadership theory of non-positional learned leadership. Transformational Leadership theory postulates that leadership can be learned and enhanced. The course will explore the knowledge base and skills necessary to be an effective leader in a variety of settings. Students will assess their personal leadership qualities and develop a plan to enhance their leadership potential.
Instructor(s): Staff
Area: Social and Behavioral Sciences Writing Intensive.
EN.660.333. Leading Change. 3.0 Credits.
In this course, we will use a combination of presentation, discussion, experiential learning, research and self-reflection to investigate issues surrounding leadership and change in communities and the economy. While considering both for-profit and non-profit entities, we will pursue topics including understanding and using theories of change; finding competitive advantage and creating strategic plans; making decisions, even in uncertain times; valuing differences; employing leadership styles; giving and receiving feedback; understanding employee relations; creating performance measures; and developing organizational cultures; and using the dynamics of influence. No audits.
Instructor(s): Staff
Writing Intensive.

EN.660.335. Negotiation and Conflict Resolution. 3.0 Credits.
The focus of this class is the nature and practice of conflict resolution and negotiation within and between individuals and organizations.
The primary format for learning in this class is structured experimental exercises designed to expose students to different aspects of negotiation and to build tangible skills through interpersonal exchange. While some class time is devoted to presentations on theories and approaches, the class method primarily relies on feedback from fellow classmates on their observations of negotiation situations and on personal reflections by students after each structured experience. Topics include conflict style, negotiation, and group conflict. No audits. Recommended Course Background: EN.660.105, an additional course in the Entrepreneurship and Management Program or in the social sciences.
Instructor(s): Staff.

EN.660.340. Principles of Management. 3.0 Credits.
This course introduces the student to the management process. The course takes an integrated approach to management by examining the role of the manager from a traditional and contemporary perspective while applying decision-making and critical-thinking skills to the challenges facing managers in today's globally diverse environment. The course examines the techniques for controlling, planning, organizing resources and leading the workforce. Not open to students who have taken EN.660.220 Principles of Management. No audits.
Prerequisites: EN.660.105
Instructor(s): Staff.

EN.660.341. Business Process and Quality Management. 3.0 Credits.
This course focuses on both quantitative and qualitative analytical skills and models essential to operations process design, management, and improvement in both service and manufacturing oriented companies. The objective of the course is to prepare the student to play a significant role in the management of a world-class company which serves satisfied customers through empowered employees, leading to increased revenues and decreased costs. The material combines managerial issues with both technical and quantitative aspects. Practical applications to business organizations are emphasized. Recommended Course Background: EN.660.105 Introduction to Business or EN.660.241 IT Management. No audits
Instructor(s): Staff
Writing Intensive.

EN.660.343. Operations and Service Management. 3.0 Credits.
This course aims to (1) direct your attention to fundamental problems and issues confronting all operations managers, (2) provide you with language, concepts, and insights which will help you to deal with these issues in order to gain competitive advantage through operations, and (3) further develop your ability to use analytical approaches and tools to understand and handle various managerial situations. Because the course deals with the management of "processes", it applies to both for-profit and non-profit organizations, to both service and manufacturing organizations, and to virtually any functional area or industry.
Prerequisites: EN.660.105 OR AS.180.102
Instructor(s): Staff.

EN.660.352. New Product Development. 3.0 Credits.
New product development is the ultimate interdisciplinary entrepreneurial art, combining marketing, technical, and managerial skills. A successful product lies at the intersection of the user's need, a technical solution, and compelling execution. This class will bootstrap your experience in the art through exercises and team projects. We will examine products and services, consumer and industrial, simple and technologically complex. Case studies will feature primary sources and the instructor's personal experiences as an inventor for a major consumer products company. Topics will span the product development cycle: identifying user needs, cool-hunting, brainstorming, industrial design, prototyping techniques, market research to validate new ideas, and project management -- especially for managing virtual teams and foreign manufacturers. No audits.
Prerequisites: EN.660.250 OR EN.500.101 OR EN.510.106 OR EN.520.137 OR EN.530.111 OR EN.560.141 OR EN.570.108 OR EN.580.111
Instructor(s): Staff
Area: Engineering.

EN.660.355. Sports Marketing. 3.0 Credits.
This course will allow students to apply marketing principles and concepts to the sports marketing environment while gaining an understanding of how event sponsorships, endorsements, licensing and naming rights are used to achieve business objectives. Through case studies and a group project, students will be exposed to a broad range of sports entities including professional sports teams, governing organizations and sports media.
Prerequisites: EN.660.250
Instructor(s): Staff.

EN.660.358. International Marketing. 3.0 Credits.
This course covers product, pricing, promotion, distribution, market research, organization and implementation and control policies relating to international marketing. It also explores the economic, cultural, political and legal aspects of international marketing. Through interactive and application-oriented assignments and cases, students will gain hands-on experience in analyzing and developing marketing strategies for organizations that market both consumer and business products/services internationally. A group project will involve the development of an international marketing plan for a specific product. One or more local international marketers will be invited to speak to the class. No audits.
Prerequisites: EN.660.250
Instructor(s): Staff.
EN.660.361. Engineering Business and Management. 3.0 Credits.  
When engineers become working professionals, especially if they become managers, they must juggle knowledge of and tasks associated with operations, finance, ethics, strategy, team citizenship leadership and projects. While engineers’ success may depend on their direct input → the sweat of their own brow – managers’ success depends on their ability to enlist the active involvement of others: direct reports, other managers, other team members, other department employees, and those above them on the organizational chart. You will learn these concepts and skills in this course. In this course, you will learn about teamwork and people management, and gain an introduction to strategy, finance, and project management. You will practice writing concise persuasive analyses and action plans and verbally defending your ideas. Cross-listed with Mechanical Engineering.  
Instructor(s): Staff  
Area: Engineering.

EN.660.363. Leadership & Management in Materials Science and Engineering. 3.0 Credits.  
In this course, you will learn about leadership, social responsibility, strategy, finance, project management and people management specifically in the materials science and engineering fields. You will practice writing concise persuasive analyses and action plans and verbally defending your ideas. You will learn the ethical guidelines for the materials science profession, to resolve team conflicts and co-lead self-managed work teams, and determine how materials science supports society’s sustainability goals and the social responsibilities of materials scientists. Our class time will feel like a business meeting, and we will refer to class periods as meetings. When you complete this course, you will be prepared to be a working professional. Your Teaching Team looks forward to seeing you develop into a career engineer, scientist, manager, entrepreneur, professor or other professional over the years.  
Instructor(s): Staff  
Area: Engineering, Natural Sciences.

EN.660.380. Clark Scholar Engineering Design II. 1.0 Credit.  
In this course Clark Scholar students will continue their training in design thinking. Students will focus on both the identification of needs and the assessment of these needs for project selection. This course will consist of in class workshops and field immersion exercises.  
Instructor(s): Staff.

EN.660.400. Practical Ethics for Future Leaders. 2.0 Credits.  
This is an interdisciplinary course on leadership, decision making, and the application of ethics to real world problems. JHU students are future leaders of innovation across many fields, including but not limited to engineering, business, law, journalism, government, science and medicine. The awesome power of emerging technologies to modify our world - our food supply, our health, even people - will only increase and become more pressing in coming years. The goal of this course is to give students a deep and practical grounding in how leaders make decisions, and in particular difficult decisions where there is no clearly right answer. In this two-credit course, we will cover important concepts in the practical application of ethics; in decision making; and leadership. There is a companion 1-credit course, EN.660.406 which forms a second part of the course, and which will take a deep look at a major ethical issue resulting from the newfound capabilities made possible by emerging technologies. Students of EN.660.400 can choose whether or not to register for EN.660.406. This course includes online lectures, readings and substantial discussion components, as well as weekly meetings in small sections. The course spans the first two thirds of the semester, leaving the final third of the semester available for the 1-credit EN.660.406.  
Instructor(s): Staff  
Area: Humanities.

EN.660.404. Business Law II. 3.0 Credits.  
Building on the material from Business Law I, topics examined include entrepreneurship, business entities and business formation, principles of agency, real property, personal property, bailments, bankruptcy, secured transactions, employment discrimination, business financing, investor protection, antitrust and environmental law. No audits.  
Prerequisites: EN.660.205 OR EN.660.308  
Instructor(s): Staff  
Area: Social and Behavioral Sciences.

EN.660.406. Practical Ethics for Future Leaders - Special Topic. 1.0 Credit.  
This is a one-credit course that serves as a companion and second part to the Practical Ethics course EN.660.400, which is a co-requisite for this course. In this one-credit course, we will take a deep look at a major ethical issue resulting from the newfound capabilities made possible by emerging technologies. The students will work together in small groups, across multiple meetings with flexible scheduling, to discuss and make decisions on real-world decisions. Previous years topics included the release of genetically modified mosquitoes in Florida, and the presence of human decision-makers’ in the loop’ for military and surgical autonomous robots. This course takes place in the final one third of the semester, leaving the first two-thirds of the semester available for the 2-credit EN.660.400. Students should register for the same section number in EN.660.406 as they do for EN.660.400.  
Corequisites: EN.660.400 must be taken during the same semester as EN.660.406.  
Instructor(s): Staff  
Area: Humanities.
EN.660.410. Computer Science Innovation and Entrepreneurship. 3.0 Credits.
This course is designed to give students in CS the requisite skills to generate and screen ideas for new venture creation and then prepare a business plan for an innovative technology of their own design. These skills include the ability to incorporate into a formal business case all necessary requirements, including needs identification and validation; business and financial models; and, market strategies and plans. Student teams will present the business plan to an outside panel made up of practitioners, industry representatives, and venture capitalists. In addition, this course functions as the first half of a two course sequence, the second of which will be directed by CS faculty and focus on the actual construction/programming of the business idea. Restricted to Juniors and Seniors majoring in Computer Science or by permission of instructor. Instructor(s): Staff.

EN.660.414. Financial Statement Analysis. 3.0 Credits.
This course is designed to increase a student's ability to read and interpret financial statements and related information under both GAAP and IFRS (International Financial Reporting Standards). In addition to a review of the basic financial statements and accounting principles, the course will use industry and ratio analysis in addition to benchmarking and modeling techniques to encourage students to think in a more creative way when analyzing historic information or when forecasting financial statements. Students will assess firm profitability and risk, value assets and use spreadsheet models for financial forecasting and decision making. Not open to students who have taken EN.660.304 Financial Statement Analysis. No audits.
Prerequisites: EN.660.203
Instructor(s): Staff.

EN.660.420. Marketing Strategy. 3.0 Credits.
This writing intensive course helps students develop skills in formulating, implementing, and controlling a strategic marketing program for a given product-market entry. Using a structured approach to case analysis, students will learn how to make the kinds of strategic marketing decisions that will have a long-term impact on the organization and support these decisions with quantitative analyses. Through textbook readings, students will learn how to identify appropriate marketing strategies for new, growth, mature, and declining markets and apply these strategies as they analyze a series of marketing cases. The supplementary readings, from a broad spectrum of periodicals, are more applied and will allow students to see how firms are addressing contemporary marketing challenges. In addition to analyzing cases individually, each student will be part of a team that studies a case during the latter half of the semester, developing marketing strategy recommendations, including financial projections, and presenting them to the class. No audits.
Prerequisites: EN.660.250
Instructor(s): Staff
Writing Intensive.

EN.660.446. Multidisciplinary Technical Teams. 3.0 Credits.
Leaders – whether of a team or an organization—are charged with setting, communicating, and overseeing the implementation of a vision. Leaders ensure sustainable growth and targeted change. Leaders and members of teams that are integrated across multiple engineering and science disciplines, face special challenges regarding managing innovation, creating a team environment that facilitates experimentation, providing a balance of autonomy and collegial support, maintaining technical expertise, and facilitating inter-disciplinary communication. Instructor(s): Staff
Area: Engineering, Natural Sciences
Writing Intensive.

EN.660.450. Advertising & Integrated Marketing Communication. 3.0 Credits.
This course builds on the promotional mix concepts covered in Principles of Marketing (EN.660.250) – advertising, public relations, sales promotion and personal selling. Students will learn how marketers are changing the ways they communicate with consumers and the ways in which promotional budgets are allocated—and how this impacts the development of marketing strategies and tactics. Working with a client (provided by EdVenture Partners) that has chosen this JHU class as its "advertising agency" and an actual budget provided by the firm, the class will form small teams to mirror the functional organization of an actual ad agency (market research, media strategy/planning, copywriting/design, public relations, etc.). Student teams will then develop a promotional plan and corresponding budget to reach the desired target market (JHU undergrads who meet the client’s criteria), implement the plan and then evaluate its effectiveness through pre- and post campaign market research conducted on the target consumer. Note: Not open to students who have taken EN.660.450 as Advertising and Promotion. No audits. (Formerly Advertising and Promotion.)
Prerequisites: EN.660.250
Instructor(s): Staff.

EN.660.453. Social Media and Marketing. 3.0 Credits.
This course explores strategies for monitoring and engaging consumers in digital media. Students will gain practical knowledge about developing, implementing and measuring social media marketing campaigns. They will learn how to analyze what consumers are saying and connect with them by leveraging word of mouth, viral and buzz marketing through sites like Facebook, Twitter and YouTube. A series of assignments build upon each other toward a final social media marketing plan for a selected consumer product or service. Co-listed with EN.661.453.
Prerequisites: EN.660.250
Instructor(s): Staff.

EN.660.459. Entrepreneurial Spirits. 3.0 Credits.
Have you noticed the growth of consumer-focused, alcohol related enterprises? New wineries, breweries, distilleries and cidersies abound in response to continuing growth in customer demand. Have you contemplated starting this type of enterprise? If so, this may be a course for you!! We explore the background, opportunities and challenges in each of these spirit arenas as we investigate questions one must answer to make an informed decision about starting or joining such an enterprise. Among the topics we will study are the styles of products, vessels, production processes, costs/returns, sources of raw materials, laws and regulations, marketing options, food pairings, customers and the like. Expect to make several local field trips. Also expect to perform several individual and group assignments, the results of which you will be required to share with classmates. Instructor(s): Staff.
EN.660.460. Entrepreneurship. 3.0 Credits.
This course provides students with a solid introduction to the entrepreneurial process of creating new businesses. Students will gain an appreciation for the investors' perspective in assessing opportunities, evaluating strategies, and valuing the new enterprise. The course will cover the principal components of building a successful venture including management, market analysis, intellectual property protection, legal and regulatory issues, operations, entrepreneurial financing, and the role of the capital markets. Course work will include case studies and creation of investor marketing materials. Open to Juniors and Seniors. No Audits. Recommended Course Background: EN.660.203
Prerequisites: EN.660.105 OR EN.660.250
Instructor(s): Staff.
EN.660.500. Business Internship. 1.0 Credit.
Students may qualify for an internship with one of the many local employers with whom CLE works or they may arrange a non-local internship on their own. For non-paid internships only, students may apply for sponsorship for academic credit through CLE. Applications must include a resume, transcript and written essay and will be evaluated on the basis of work experience, GPA, writing sample, and course work. Students are expected to complete two reports assigned by the internship coordinator. S/U only.
Instructor(s): Staff.
EN.660.503. Practicum in Leadership. 1.0 Credit.
Students work on an existing leadership plan/case project under the close supervision of an Entrepreneurship and Management faculty member. Students are expected to meet regularly with the faculty member and complete assigned readings and projects. S/U only.
Instructor(s): Staff.
EN.660.567. Leadership Theory Independent Study. 3.0 Credits.
Students will be introduced to the history of Leadership Theory from the "Great Man" theory of born leaders to Transformational Leadership theory of non-positional learned leadership. Transformational Leadership theory postulates that leadership can be learned and enhanced. The course will explore the knowledge base and skills necessary to be an effective leader in a variety of settings. Students will assess their personal leadership qualities and develop a plan to enhance their leadership potential. Recommended Course Background: EN.660.105 or EN.660.220/EN.660.340. No audits.
Instructor(s): Staff.
EN.660.604. Business of Bioengineering Innovation & Design I. 3.0 Credits.
This course comprises two distinct, but related, components. The first is a broad introduction to the terms, concepts, and values of business and management. Particular emphasis will be placed on the economic, financial, and corporate contexts of our business culture, and how they impact the organization, strategy, and decision-making of business firms. The second component is an introduction to the sociological and economic forces that shape the development and diffusion of new technologies. This part is primarily designed to provide a framework for determining the commercial viability of new medical devices and the best path for realizing their value, including how to develop a compelling value proposition, analyze markets and competitors, and protect intellectual property. Throughout, the course utilizes individual exercises, case analyses, and team projects. CBID MSE Students Only
Instructor(s): Staff.
EN.660.606. Business of Bioengineering Innovation & Design. 3.0 Credits.
This course comprises two distinct, but related, components. The first is a broad introduction to the terms, concepts, and values of business and management. Particular emphasis will be placed on the economic, financial, and corporate contexts of our business culture, and how they impact the organization, strategy, and decision-making of business firms. The second component is an introduction to the sociological and economic forces that shape the development and diffusion of new technologies. This part is primarily designed to provide a framework for determining the commercial viability of new medical devices and the best path for realizing their value, including how to develop a compelling value proposition, analyze markets and competitors, and protect intellectual property. Throughout, the course utilizes individual exercises, case analyses, and team projects. CBID MSE Students Only
Instructor(s): Staff.
EN.661.128. Improvisational Techniques for Communication. 3.0 Credits.
Science and engineering are disciplines which mandate immersive study, attention to detail, and extreme forethought. Is it possible, then, that as students condition themselves to meet these needs, they compromise their ability to navigate impromptu social situations, public speaking events, and the like? Following the lead of innovative communities and businesses, this class turns to improvisation techniques to develop communication skills, encourage creative problem solving, and support teamwork. Through imaginative movement and play, improv encourages students to hone their abilities to initiate, listen, react, and connect. Using the power of “Yes, And…”, improv’s most famous aphorism, students learn to respond confidently and spontaneously to unforeseen challenges.
Instructor(s): Staff

EN.661.129. Improv for Entrepreneurs and Leaders. 3.0 Credits.
Improv is about finding the fullest potential in what is readily available. In fact, all 7 billion people on this planet improvise every single day, but only a few of us improvise well. It’s imperative that tomorrow’s leaders and entrepreneurs navigate and adapt to the changing world with extemporaneous finesse. To achieve such outcomes this class takes the theory behind theatrical improv, and applies it to the everyday, fostering communication and collaboration ideal for the work environment, where such skills are often overlooked in favor of the purely technical. Designed for students without any acting experience, there are no prerequisites to participate. This class will push the boundaries of your thought, facilitate greater awareness and expose you to powerful creative tools to enhance your professional and entrepreneurial success.
Instructor(s): Staff

EN.661.250. Oral Presentations. 3.0 Credits.
This course is designed to help students push through any anxieties about public speaking by immersing them in a practice-intensive environment. They learn how to speak with confidence in a variety of formats and venues - including extemporaneous speaking, job interviewing, leading a discussion, presenting a technical speech, and other relevant scenarios. Students learn how to develop effective slides that capture the main point with ease and clarity, hone their message, improve their delivery skills, and write thought-provoking, well-organized speeches that hold an audience’s attention. No audits. Not open to students that have taken EN.661.150.
Prerequisites: Students make take EN.661.250 or EN.661.150, but not both.
Instructor(s): Staff
Writing Intensive.

EN.661.251. Oral Presentations for International Students. 3.0 Credits.
This course is designed to help students push through any anxieties about public speaking by immersing them in a practice-intensive environment. They learn how to speak with confidence in a variety of formats and venues - including extemporaneous speaking, job interviewing, leading a discussion, presenting a technical speech, and other relevant scenarios. Students learn how to develop effective slides that capture the main point with ease and clarity, hone their message, improve their delivery skills, and write thought-provoking, well-organized speeches that hold an audience’s attention. Special attention will be placed on diction, pronunciation, tone, pace and emphasis of language. Additional attention also will be given to syntax as well as non-verbal communication patterns. No audits. Not open to students that have taken EN.661.151.
Prerequisites: Students may take EN.661.251 or EN.661.151, but not both.
Instructor(s): Staff
Writing Intensive.

EN.661.271. Communicating as Scientists and Engineers. 3.0 Credits.
This course explores how to effectively communicate technical subjects to diverse audiences. Students will engage scientific and engineering communications from multiple genres, including popular articles, long form journalism, fiction, technical reports, and TED Talks, to analyze what makes technical communication successful. In addition to honing their communication skills through writing assignments, response papers, and brief presentations, students will apply what they’ve learned by writing a scientific or engineering article and delivering a technical presentation based on their area of study.
Instructor(s): Staff
Writing Intensive.

EN.661.301. Writing for the Law. 3.0 Credits.
This course teaches students to communicate effectively in various modes of legal discourse that are fundamental to the practice of law. Students will engage in writing nearly every session and will learn the basics of legal writing, editing (both the student’s and others’ work), and written/oral advocacy skills. Students can expect to work with litigation-related documents such as pleadings, preliminary and dispositive motions, and appellate briefs as well as non-litigation-related documents such as opinion articles, publications, essays, and various business-related contracts.
Instructor(s): Staff
Writing Intensive.

EN.661.306. Special Topics in Professional Writing: Freelance Travel Writing. 3.0 Credits.
Are you interested in doing travel writing but can’t go abroad? Fear not! Some of the best travel writing happens when writers turn their gaze locally and write from the place they know best: their hometown. This eight-week, online class is designed to help you leverage whatever summer location you find yourself in—your hometown, your lab in Baltimore, or somewhere fabulous—to create high-impact, salable travel pieces. Each week, you’ll watch new recorded lectures on Blackboard, Skype with the instructor for 30 minutes, discuss a classic piece of travel writing, and interact with your peers—all from the comfort of your own home at your own pace. After gaining familiarity with the genre by reading several classics of travel writing and a selection of exemplary magazine articles, we will learn how to brainstorm ideas, plan research, interview skillfully, take useable photos with smartphones, polish pitches to editors, and write/revise/submit work for publication.
Instructor(s): Staff
Writing Intensive.

EN.661.315. Culture of the Engineering Profession. 3.0 Credits.
This course focuses on building understanding of the culture of engineering while preparing students to communicate effectively with the various audiences with whom engineers interact. Working from a base of contemporary science writing (monographs, non-fiction, popular literature and fiction), students will engage in discussion, argument, case study and project work to investigate: the engineering culture and challenges to that culture, the impacts of engineering solutions on society, the ethical guidelines for the profession, and the ways engineering information is conveyed to the range of audiences for whom the information is critical. Additionally, students will master many of the techniques critical to successful communication within the engineering culture through a series of short papers and presentations associated with analysis of the writings and cases. No audits. WSE juniors and seniors or by instructor approval.
Instructor(s): Staff
Area: Social and Behavioral Sciences
Writing Intensive.
EN.661.317. Culture of the Medical Profession. 3.0 Credits.
This course builds understanding of the culture of medicine as well as the ways in which different strata within society have access to and tend to make decisions about health and health related services while preparing students to communicate effectively with the various audiences with whom medical professionals interact. Working from a base of contemporary science writing (monographs, non-fiction, popular literature and fiction), students engage in discussion, argument, case study and project work to investigate topics such as the medical culture, the ways medicine is viewed by different segments of society, issues associated with access to health care, ethical dilemmas and guidelines for medical decisions, the impacts of medical and engineering solutions on society, decision making within client/patient groups, social and cultural differences that effect behavioral change, and the ways medical information is conveyed to the range of audiences for whom the information is critical. Additionally, students will master many of the techniques critical to successful communication through a series of short papers and presentations associated with analysis of the writings and cases. For sophomores, juniors, and seniors or by permission of instructor. No audits.
Instructor(s): Staff
Area: Social and Behavioral Sciences
Writing Intensive.

EN.661.329. Improv for Science, Technology and Industry. 3.0 Credits.
It’s not what you say, it’s how you say it. In competitive STEM and industrial fields communication is essential. Effectively disseminating and receiving information not only affects the fields themselves, but each professional in those respective fields. In this class students will expound upon improv techniques to strengthen their ability to share scientific and technical information fluently and spontaneously without confusion or ambiguity. Additionally, this class will build upon students’ oratory and collaborative skills using theatrical exercises and improv comedy to cultivate powerful, thoughtful and authentic voices.
Prerequisites: EN.661.128 or EN.661.129
Instructor(s): Staff

EN.661.360. Marketing Your Start-up. 3.0 Credits.
This course provides students who have an enterprise or business idea with a road map for developing a complete marketing plan for their venture. From conducting industry and competitor analyses to formulating a marketing program with corresponding projections, students will have developed a professional marketing plan upon the conclusion of the course. Lecture content will be supplemented by guest speaker presentations by local entrepreneurs and marketing practitioners.
Prerequisites: EN.660.250 OR EN.660.105
Instructor(s): Staff.

EN.661.361. Corporate Communications & P.R.. 3.0 Credits.
This course focuses on the ways that organizations, both for-profit and non-profit, manage their communications to deliver strategic, coherent and compelling messages to their varied stakeholders. Using case studies and team-based, real world projects, we will explore topics including public and media relations, corporate image, branding, advertising, internal and external communications, crisis management, investor relations, ethics and social responsibility. In the process, we will consider issues ranging from organizational culture and leadership styles to defining strategy, managing conflict, defending positions and disagreeing agreeably. No audits. Recommended Course Background: AS.220.105, EN.661.110, AS.060.113 or AS.060.114, AS.060.215, EN.660.250, EN.660.105, and EN.661.250
Instructor(s): Staff
Writing Intensive.

EN.661.370. Visual Rhetoric. 3.0 Credits.
This course introduces students to basic concepts in visual communication. Students use principles of design thinking to produce projects that are both conceptually and visually compelling. Along the way, they learn design tools and techniques that help them refine their schemes. They also develop their vocabularies in visual communication so that they can better discuss their own work. Topics include: visual perception, composition/form, color theory, typography, photography, text, layers, grids and other systems of visual information architecture.
Instructor(s): Staff.

EN.661.380. Business Analytics. 3.0 Credits.
In this course students learn the procedures and processes that researchers use to determine answers to questions such as how to price a product, how to differentiate one product from another, and how to evaluate customer response to an offering. The materials combine fundamentals of research design with statistics procedures to answer the questions that entrepreneurs and marketing managers must answer as they write business plans, develop their product mix, set prices, create advertising and test products. The course combines case study, simulated situations, lecture, discussion and real-time projects to produce answers using the techniques, tools and procedures typically used in North American enterprises.
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

EN.661.500. Catalyst: A Student Run Magazine Independent Study. 1.0 - 3.0 Credits.
Students enrolled in this independent study will work as writers and editors for the student-run magazine. They will collaborate with the editorial team to produce content, develop magazine policies, and ensure that student work adheres to those policies. They may also create/direct artwork as needed.
Instructor(s): Staff.
EN.661.713. Advanced Communication for International Students: Financial Math. 1.5 Credits.

This course is designed to help only those international students studying in a special cohort toward a Master’s Degree in Financial Math. It teaches advanced ESL students to communicate more effectively with a wide variety of specialized and non-specialized audiences in a professional setting with ESL-specific intensive help in grammar, pronunciation, idiomatic phrasing, and overall clarity for students whose native language is not English. Projects include meet-and-greets, effective e-mails, memos, resumes, cover letters, reports, oral presentations, and building an overall comfort level with oral communication in English. Class emphasizes writing clearly and persuasively, creating appropriate visuals, developing oral presentation skills, working in collaborative groups, giving and receiving feedback, and simulating real world environments in which most communication occurs. P/F grading only.
Instructor(s): Staff.

EN.662.611. Strategies: Accounting & Finance. 3.0 Credits.

This course includes a review of financial accounting with an emphasis on the implications of GAAP selections and other managerial decisions on the financial statements. Historic financial performance is assessed using ratio analysis. Relevant cash flows are used in capital budgeting situations; projects are analyzed using discounted cash flow techniques as a measure of valuation. Managerial accounting topics of financial forecasting, cost accumulation, cost allocation, product costing, and variance analysis are used in decision making. For M.S. in Engineering Management only; graded (not P/F); no audits.
Instructor(s): Staff.

EN.662.692. Strategies for Innovation & Growth. 3.0 Credits.

This course requires participants to work in groups to address, design and plan a business solution for an engineering problem with social implications. More specifically, students will work on cross-disciplinary teams to develop a commercially viable new technology. They must select a problem amenable to an engineering solution, investigate the problem, research the issues and potential, develop a design for the technology, investigate the competitive advantage, and create and present a business plan for the idea. Course content will address many of the issues that will be encountered during the process of bringing an idea to fruition. For M.S. in Engineering Management only; graded (not P/F); no audits.
Instructor(s): Staff.

EN.663.622. Professional Presentations for Graduate Students. 3.0 Credits.

This course is designed to help scientists and engineers improve their oral presentation skills in a practice-intensive environment. Students will learn how to hone their message, to craft presentations that address both technical and non-technical audiences, and create clear, compelling PowerPoint presentations. All presentations will be recorded for self-evaluation, and students will receive extensive instructor and peer feedback. MSEM students only. Not open to undergraduates.
Instructor(s): Staff.

EN.663.600. Ethical Decision-making in Business and Science. 1.5 Credits.

This course introduces the student to concepts relevant to resolving ethical issues in business, science, and society. Students will learn ethical reasoning skills and frameworks to aid decision-making and to discuss ethical questions with their leaders, whether in a business, consulting or engineering firm, a science lab, or the communities within which they live and work.
Instructor(s): Staff.

EN.663.615. Building Effective Posters and Slides. 1.5 Credits.

This course teaches techniques in visual communication geared to suit emerging scientists. Students will learn the fundamentals of visual design, including theories of form, color and visual perception. The course will cover principles of typography, grid systems and other methods of establishing visual hierarchy. There will also be a short unit on commercial photography. Students will put this knowledge to work in the classroom to produce slides, conference posters and data visualizations. Grading: P/F or for letter grades.
Instructor(s): Staff.

EN.663.617. Information Visualization and Storytelling. 1.5 Credits.

This course explores the process of developing compelling visual stories based on data and information. Students will learn to edit, contextualize, sequence and compare data more effectively. They will also learn to use visual design tools to clarify the message they wish to convey about their data. Topics will include design thinking, visual perception, design theory, color theory, spatial relationships, pattern recognition, page layout, and basic probability and statistic concepts commonly used in the visualization process.
Instructor(s): Staff.

EN.661.713. Advanced Communication for International Students: Financial Math. 1.5 Credits.

This course is designed to help only those international students studying in a special cohort toward a Master’s Degree in Financial Math. It teaches advanced ESL students to communicate more effectively with a wide variety of specialized and non-specialized audiences in a professional setting with ESL-specific intensive help in grammar, pronunciation, idiomatic phrasing, and overall clarity for students whose native language is not English. Projects include meet-and-greets, effective e-mails, memos, resumes, cover letters, reports, oral presentations, and building an overall comfort level with oral communication in English. Class emphasizes writing clearly and persuasively, creating appropriate visuals, developing oral presentation skills, working in collaborative groups, giving and receiving feedback, and simulating real world environments in which most communication occurs. P/F grading only.
Instructor(s): Staff.

EN.662.611. Strategies: Accounting & Finance. 3.0 Credits.

This course includes a review of financial accounting with an emphasis on the implications of GAAP selections and other managerial decisions on the financial statements. Historic financial performance is assessed using ratio analysis. Relevant cash flows are used in capital budgeting situations; projects are analyzed using discounted cash flow techniques as a measure of valuation. Managerial accounting topics of financial forecasting, cost accumulation, cost allocation, product costing, and variance analysis are used in decision making. For M.S. in Engineering Management only; graded (not P/F); no audits.
Instructor(s): Staff.

EN.662.692. Strategies for Innovation & Growth. 3.0 Credits.

This course requires participants to work in groups to address, design and plan a business solution for an engineering problem with social implications. More specifically, students will work on cross-disciplinary teams to develop a commercially viable new technology. They must select a problem amenable to an engineering solution, investigate the problem, research the issues and potential, develop a design for the technology, investigate the competitive advantage, and create and present a business plan for the idea. Course content will address many of the issues that will be encountered during the process of bringing an idea to fruition. For M.S. in Engineering Management only; graded (not P/F); no audits.
Instructor(s): Staff.

EN.663.622. Professional Presentations for Graduate Students. 3.0 Credits.

This course is designed to help scientists and engineers improve their oral presentation skills in a practice-intensive environment. Students will learn how to hone their message, to craft presentations that address both technical and non-technical audiences, and create clear, compelling PowerPoint presentations. All presentations will be recorded for self-evaluation, and students will receive extensive instructor and peer feedback. MSEM students only. Not open to undergraduates.
Instructor(s): Staff.

EN.663.600. Ethical Decision-making in Business and Science. 1.5 Credits.

This course introduces the student to concepts relevant to resolving ethical issues in business, science, and society. Students will learn ethical reasoning skills and frameworks to aid decision-making and to discuss ethical questions with their leaders, whether in a business, consulting or engineering firm, a science lab, or the communities within which they live and work.
Instructor(s): Staff.

EN.663.615. Building Effective Posters and Slides. 1.5 Credits.

This course teaches techniques in visual communication geared to suit emerging scientists. Students will learn the fundamentals of visual design, including theories of form, color and visual perception. The course will cover principles of typography, grid systems and other methods of establishing visual hierarchy. There will also be a short unit on commercial photography. Students will put this knowledge to work in the classroom to produce slides, conference posters and data visualizations. Grading: P/F or for letter grades.
Instructor(s): Staff.

EN.663.617. Information Visualization and Storytelling. 1.5 Credits.

This course explores the process of developing compelling visual stories based on data and information. Students will learn to edit, contextualize, sequence and compare data more effectively. They will also learn to use visual design tools to clarify the message they wish to convey about their data. Topics will include design thinking, visual perception, design theory, color theory, spatial relationships, pattern recognition, page layout, and basic probability and statistic concepts commonly used in the visualization process.
Instructor(s): Staff.
EN.663.623. Professional Writing and Communication for International Students: Financial Math. 1.5 Credits.

This course will prepare you to be competitive in the world of business by offering you some of the oral and written communication techniques you need to be successful. While working to enhance pronunciation, grammar, idiomatic expressions, and business vocabulary, you will work to speak comfortably in business social settings and meetings and to write effectively in a variety of modes not limited to e-mails, memoranda, resumes, and summary reports. The overall goal for all assignments is to speak and to write in clear, effective English. Moreover, improving oral and written communications will give you confidence, help you to make a good impression, and just maybe give you that “edge” you need to get the job you want or the project you desire once employed. Finally, individual pronunciation conferences will be scheduled with each of you throughout the semester. Financial Math students only. P/F only.

Instructor(s): Staff.

EN.663.624. Advanced Communication for International Students: Financial Math. 1.5 Credits.

This course is designed to help only those international students studying in a special cohort toward a Master's Degree in Financial Math. It teaches advanced ESL students to communicate more effectively with a wide variety of specialized and non-specialized audiences in a professional setting with ESL-specific intensive help in grammar, pronunciation, idiomatic phrasing, and overall clarity for students whose native language is not English. Projects include meet-and-greets, effective e-mails, memos, resumes, cover letters, reports, oral presentations, and building an overall comfort level with oral communication in English. Class emphasizes writing clearly and persuasively, creating appropriate visuals, developing oral presentation skills, working in collaborative groups, giving and receiving feedback, and simulating real world environments in which most communication occurs. P/F grading only.

Instructor(s): Staff.

EN.663.626. Improvisation for Enhanced Teamwork and Communication. 1.5 Credits.

Following the lead of innovative communities and businesses, this course turns to improvisation techniques to develop communication skills, encourage creative problem solving, and support teamwork. Designed for students without any acting experience, there are no prerequisites to participate. In a non-threatening, judgment-free atmosphere, we begin with improv fundamentals to help students master the subtleties of communication through voice, expression, and body language. As students experiment with imaginative movement and play, they learn to respond spontaneously and confidently to unforeseen challenges. Working together in pairs and small groups, students build trust and operate as fluid and dynamic team members. Throughout the course students build skills to minimize stress, overcome rejection, find comfort in fear, unleash creativity, and trust in their ability to communicate effectively.

Instructor(s): Staff.

EN.663.630. Business Creation and Contracts. 1.5 Credits.

Introduces participants to the fundamental aspects of law associated with developing and bringing new products to the marketplace. Arranged in modules and taught largely through the case method, the course features the following topics: creating and forming businesses and contracts. GRADING: P/F for most students; letter grades for MSEM students.

Instructor(s): Staff.

EN.663.631. Intellectual Property Law. 1.5 Credits.

Arranged in modules and taught largely through the case method, the course features the following topics: intellectual property, principal-agent relations; and product liability. Not only will participants learn the principles associated with each topic, but also they will master the questions and concerns to use when working with legal counsel on these issues in the future. GRADING: P/F for most students; letter grades for MSEM students.

Instructor(s): Staff.

EN.663.633. Regulatory Writing. 1.5 Credits.

Regulatory writing explores the preparation of clinical documents throughout the life cycle of a (potential) treatment, starting with describing and reporting data from clinical trials, through preparing regulatory submission documents. Clinical documents to be discussed include clinical trial protocols, clinical trial informed consents (ICFs), investigator brochures (IBs), and clinical study reports (CSRs) among others. Essential skills for creating clear and readable documents including basic grammar and usage as well as sentence structure will also be reviewed.

Instructor(s): Staff.

EN.663.634. Improvisation for Communication. 3.0 Credits.

It's not what you say, it's how you say it. Science and Engineering are disciplines which mandate immersive study, attention to detail, and extreme forethought. Is it possible, then, that as students condition themselves to meet these needs, they compromise their ability to navigate impromptu social situations, public speaking events, and the like? In this class, students will expound upon improv techniques to strengthen their ability to share scientific and technical information fluently and spontaneously without confusion or ambiguity. This class turns to improvisation techniques to develop communication skills, encourage creative problem solving, and support teamwork.

Instructor(s): Staff.

EN.663.640. Writing Grant and Contract Proposals. 1.5 Credits.

Almost regardless of professional setting, proposals are used to secure work. They are the basis of funding in consulting, academic research, many social enterprises, business-to-business commerce, and government contracting. They require huge amounts of time and energy, yet success is far from guaranteed. In this module, you will master some of the techniques required for proposal writing success. Among the topics addressed are funding sources, writing skills that work, required content for all proposals, creating one voice in shared documents, dealing with "best-and-final negotiations and other important topics. Expect to complete several writing assignments for class including at least part of your own proposal.

Instructor(s): Staff.

EN.663.641. Improving Presentation Skills for International Students. 1.5 Credits.

This course is designed to help scientists and engineers who are non-native English speakers improve their oral presentation skills in a practice-intensive environment. Students will learn how to hone their message, to craft presentations that address both technical and non-technical audiences, and create clear, compelling PowerPoint presentations. All presentations will be recorded.

Instructor(s): Staff.
EN.663.643. Science Outreach: Communicating Science to the Public. 1.5 Credits.
This course teaches students to communicate effectively with a non-specialized audience including the “voting public,” teachers and high school students. Class projects include developing materials for mainstream science news outlet and a hands-on presentation. Class content emphasizes writing clearly for a non-technical audience, creating appropriate visuals and hands-on manipulatives, developing oral presentation skills, giving and receiving feedback, and simulating the real world environment in which most communication occurs. This is a 7-week course and is not open to undergraduates.
Instructor(s): Staff.

EN.663.644. Writing Articles and Technical Reports. 1.5 Credits.
Professionals in almost every occupation write – for multiple audiences in various information formats and for many reasons. Estimates of time spend writing in various occupations range from 25% to 35% of total work time. With so much time invested in the activity, it is imperative to learn to write effectively and efficiently. This Module addresses critical skills including how to find and qualify publishing opportunities; understanding and adjusting to different requirements; matching text to various audiences; developing striking visuals; and dealing with issues of clarity, coherence and style. This is a 7-week course and is not open to undergraduates.
Instructor(s): Staff.

EN.663.645. Improving Presentation Skills for Scientists and Engineers. 1.5 Credits.
This course is designed to help scientists and engineers improve their oral presentation skills in a practice-intensive environment. Students will learn how to hone their message, to craft presentations that address both technical and non-technical audiences, and create clear, compelling PowerPoint presentations. All presentations will be recorded for self-evaluation, and students will receive extensive instructor and peer feedback. Graduate students only. This is a 7-week course and is not open to undergraduates.
Instructor(s): Staff.

EN.663.646. Improving Presentation and Interview Skills for Humanities Students. 1.5 Credits.
This course is designed to give Humanities students an opportunity to refine their lecturing and interviewing skills in a practice-intensive environment. Students will learn how to hone their message, to craft presentations that address both expert and non-expert audiences, and create clear, compelling PowerPoint presentations (if appropriate). All presentations will be recorded for self-evaluation, and students will receive extensive instructor and peer feedback. Graduate students only. This is a 7-week course that begins halfway through the semester and is not open to undergraduates. Second 7 Weeks, Wednesday 4 – 6:30 pm.
Instructor(s): Staff.

EN.663.648. Introduction to Dissertation Writing. 1.5 Credits.
This course is designed to help students in any discipline and in any phase of the dissertation process move their work forward. Whether you are a beginning student who has no idea what your topic is or an advanced student facing the submission process in a few months, you will be able to use this workshop to help you focus your efforts more effectively and find out best practices for doing dissertation writing here at JHU. PhD students only.
Instructor(s): Staff
Area: Engineering, Natural Sciences.

EN.663.649. Continuing Dissertation Writing Workshop. 1.5 Credits.
This workshop provides continuing dissertation writers with the structure of a traditional classroom environment to help facilitate work on the dissertation and to provide a framework of personal accountability in meeting personal writing goals. This course is only open to students who have taken EN.663.648 Introduction to Dissertation Writing. PhD students only.
Prerequisites: EN.663.648
Instructor(s): Staff
Area: Engineering, Natural Sciences.

EN.663.651. The Entrepreneurial Cycle and Developing Effective Business Plans. 1.5 Credits.
So you have an idea for a business – now what? How do you convert your idea to a plan? What factors must you consider and how should you do that? How do you think about customers and competition? How much money do you need and where can you find it? How do you pitch your idea for maximum impact? Answers to these questions and more are the topics of concern for this module. Expect to build at least several sections of a business plan for your idea with the time period of the class. Graduate students only.
Instructor(s): Staff.

EN.663.652. Emotional and Cultural Competency. 1.5 Credits.
We live in increasingly diverse society and an increasingly connected world. Times require new skills and awareness; “smarts” as defined by IQ is no longer sufficient for success. Instead, an understanding of other cultures, a willingness to exercise empathy, and the ability to identify and work with the feelings of self and others are keys to successful participation in the workforce. This Module addresses these skills in theoretical and practical ways so as to expand the awareness and capacities of participants.
Instructor(s): Staff.

EN.663.653. Innovation and Entrepreneurship. 3.0 Credits.
This two-semester course in innovation and entrepreneurship is designed to give students the requisite skills to generate and screen ideas for new venture creation and then prepare the business plan for an innovative technology of their own design. The curriculum will focus on the ability of students to identify market needs, validate those needs, develop appropriate solutions, and construct the business case. Students will form multi-disciplinary teams to explore specific market spaces, usually provided by outside sponsors. The first semester will focus on identifying problems worth solving. During the second semester, teams will 1) select one problem, 2) design and build the solution to that problem, 3) identify the inherent commercial opportunities, and 4) formulate the business plan.
Instructor(s): Staff.

EN.663.654. Commercializing Your Invention or Idea. 1.5 Credits.
It is one thing to have an idea and quite another to move the idea from idea and basic research to use in the world of business or manufacturing. This course addresses the process and skills required to make that transition. Among the topics addressed in this class are the following: recognizing the potential of ideas, addressing the patent landscape, understanding markets, determining resource requirements, design and prototypes, and finding financing. Graduate and Post Doc Only.
Instructor(s): Staff.

EN.663.655. Social Media Integration for Entrepreneurship. 1.5 Credits.
Graduate students only.
Instructor(s): Staff.
EN.663.657. Innovation and Entrepreneurship II. 3.0 Credits.

This two-semester course in innovation and entrepreneurship is designed to give students the requisite skills to generate and screen ideas for new venture creation and then prepare the business plan for an innovative technology of their own design. The curriculum will focus on the ability of students to identify market needs, validate those needs, develop appropriate solutions, and construct the business case. Students will form multi-disciplinary teams to explore specific market spaces, usually provided by outside sponsors. The first semester will focus on identifying problems worth solving. During the second semester, teams will 1) select one problem, 2) design and build the solution to that problem, 3) identify the inherent commercial opportunities, and 4) formulate the business plan.

Prerequisites: EN.663.653
Instructor(s): Staff.

EN.663.660. Managing People and Resolving Conflicts. 1.5 Credits.

Have you ever had to deal with a difficult person at work or in the lab? Have you been a member of a team on which team dysfunction was so bad that it makes television sitcoms look normal? Why are some companies much more productive and pleasant to work with than others? Do you understand techniques of persuasion and how to participate effectively in negotiations? These topics are among the ideas we develop and practice in this class, using a combination of seminar style reading and discussion, lecture and in-class activity. Graduate students only.

Prerequisites: Students may take EN.663.660 or EN.663.663, but not both.
Instructor(s): Staff
Area: Engineering, Natural Sciences.

EN.663.663. The People Side of Work: Management, Conflict Resolution and Negotiation. 1.5 Credits.

Graduate and Post Doc Only.
Instructor(s): Staff.

EN.663.664. Marketing Strategies. 1.5 Credits.

This course, designed for students who have no prior instruction or experience in marketing, provides students with the opportunity to develop skills in formulating, implementing, and controlling a strategic marketing program (including sales and profit forecasts) for a given product-market entry. Using a structured approach to case analysis, students will learn how to make the kinds of strategic marketing decisions that will have a long-term impact on the organization. Through textbook readings, students will learn how to identify appropriate marketing strategies for new, growth, mature, and declining markets and apply these strategies as they analyze a series of marketing cases. The supplementary readings, from a broad spectrum of business periodicals, are more applied and will allow students to see how firms are addressing contemporary marketing challenges. And, one or more guest speakers from different functional areas of marketing, will be invited to speak to the class. In addition to analyzing cases individually, each student will be part of a team that studies a case during the latter half of the semester, developing marketing strategy recommendations with corresponding financials and presenting them to the class.

Instructor(s): Staff.

EN.663.666. Managing Personal Finances. 1.5 Credits.

The class in Managing Personal Finance is designed to familiarize the student with the basic concepts and quantitative techniques of personal financial planning and financial literacy. The course begins with a discussion of budgeting and the time value of money and moves on to the basic principles of financial planning in the areas of taxation, consumer credit, housing decisions, insurance, investing fundamentals and retirement planning. Graduate students only. No undergrads.
Instructor(s): Staff.

EN.663.670. Project Management. 1.5 Credits.

Projects are temporary activities devised to achieve very specific goals in a designated timeframe for a specified amount of resources. Often they involve disparate activities, frequently separated by distance and sometimes involving different staff and materials. For the project to successfully meet its objectives, all these items must be planned, coordinated and orchestrated. This module explores the processes and tools available to those who must manage projects to optimize outcomes within the primary constraints of time, quality, scope and budget. Class time involves presentations, examples and discussion.

Instructor(s): Staff.

EN.663.671. Leading Change. 1.5 Credits.

Change happens, like it or not!! It is necessary for progress and the result of innovation, yet change makes individuals and organizations so uncomfortable that most people and groups within organizations vigorously resist change. So the questions become how to cause, how to embrace and how to lead constructive change in our selves, our organizations and our communities – in ways that colleagues and would-be colleagues support and contribute toward success. The primary format for learning in this course is seminar style with reading, researching and sharing of information as well as structured, experiential activities designed to build skills through practice and interpersonal exchange. Class time is devoted to discussion, observation, feedback, additional exercises and presentation. Additionally participants engage in reflection and explanation of their considerations as the course progresses. GRADING: P/F for most students; letter grades for MSEM students. No undergraduates allowed except enrolled MSEM combined bachelor’s/master’s students.

Instructor(s): Staff.

EN.663.672. Management and Technology Consulting. 1.5 Credits.

Management consulting, an American innovation in organizational development, now has world-wide practice and effects. Almost every business sector— including private, governmental and NGO’s— employs consultants. Consultants must be able to effectively frame problems, understand their context, generate solutions, and protect the client and stakeholders, as well as work in a team environment and deliver a quality product. This class addresses the fundamental skills and expectations of working in this profession through a combination of lecture, discussion and exercise.

Instructor(s): Staff.
EN.663.673. Leading Teams in Virtual, International and Local Settings. 1.5 Credits.

Team-based leadership takes place in many different groups. Basic principles related to all contexts will be discussed. The nuances of leading in teams in different environments including face to face, virtual teams such as Skype, Google Chat, etc., and culturally different/global teams will be explored and practiced. The class environment will be discussion, team and practically based. The primary format for learning in this course is seminar style with reading, researching and sharing of information as well as structured, experiential activities designed to build skills through practice and interpersonal exchange. Class time is devoted to discussion, observation, feedback, additional exercises and presentation. Additionally, participants engage in reflection and explanation of their consideration as the course progresses. Further, participants read several texts and articles as well as perform extensive research in preparation for assignments.

Instructor(s): Staff

Area: Engineering, Natural Sciences.

EN.663.674. Fundamentals of Management. 1.5 Credits.

Managers must juggle knowledge of and tasks associated with operations, finance, information technology, strategy, and projects. Much of managerial success, however, depends less on managers’ direct input – the sweat of their brows – than on their ability to enlist the active involvement of others: direct reports, other managers, other team members, and those above them on the organizational chart. It is imperative that managers be adept at influencing those over whom they have no formal authority as well as guiding and directing those who report to them. In this course, you will learn and practice the concepts and skills necessary to manage, direct, and guide others as well as content associated with building strategy and structure in organizations.

Instructor(s): Staff.

EN.663.675. Communicating in a Crisis. 1.5 Credits.

A crisis is a major occurrence with potentially negative consequences. In Chinese, the word “crisis” means “dangerous opportunity” signifying that an individual or an organization can emerge stronger from a crisis – not without damage but stronger – with the right management and communication deployed effectively to the right audiences in the right channel. In this course, we will explore what managing a crisis well actually means. Who do you need to communicate with? What channels are appropriate? What messaging works for different audiences? Using the case method, live simulations, and real-world examples we will distinguish the factors that create opportunities from crises from those that deepen the danger.

Instructor(s): Staff.

EN.663.676. Demand Discovery: Finding and Creating Customer Value. 1.5 Credits.

Do you love your smartphone? You're not alone. Steve Jobs knew how to design products that customers fell in love with. So did Henry Ford. So why is it so hard? This course focuses on real-world methods of discovering and profitably delivering value to customers. At the heart of any successful business is the identification and profitable satisfaction of unique customer needs. And the ongoing process of identifying, developing, and delivering new value propositions is the basis for continued growth. But this formula can be elusive for new ventures and existing businesses alike. The course presents leading edge methods and techniques to identify sources of opportunity, design new value propositions, and develop profitable and scalable business models—all while reducing venture risk. Developed from techniques used by entrepreneurs and innovative product managers, this course teaches key principles of offering development and innovation, through a combination of readings, case studies, and real-world exercises. The course will involve practical projects for students to identify and design offering concepts, as well as to test and price them. It is designed for students interested in business, entrepreneurship, intrapreneurship, product management, technology management, venture capital, and management consulting.

Instructor(s): Staff.

Cross Listed Courses

Entrepreneurship and Management

EN.660.321. Managing & Marketing Social Enterprises. 3.0 Credits.

This course focuses on preparing students to engage in and lead social enterprises as we explore the options for creating social value. Using a combination of lecture, case study and project work, we investigate both for-profit and non-profit models for creating social value with special emphasis on the non-profit community. Particular emphasis is placed on the management challenges of social enterprises such as creating and conveying their message, options for dealing with finances, relationships within communities, and methods for building constituencies. Additionally, we address critical issues such as measures of success, scale, replication and failure. The class requires contact with organizations in the community as well as one long weekend away from campus. Recommended Course Background: EN.660.105 or EN.660.333 or EN.660.220/EN.660.340. No audits.

Instructor(s): Staff

Writing Intensive.

EN.660.357. Copywriting and Creative Strategy. 3.0 Credits.

Uncover the process of creative thinking for innovation and conceiving “big ideas” in marketing. Students will be exposed to creative theory and practice as they select a consumer product and determine strategic market positioning, target demographics, media vehicles and creative guidelines. Then students will learn the craft of advertising copywriting for print, broadcast and digital media as they develop finished creative executions for the chosen organization that all build to a complete integrated marketing campaign. No audits.

Instructor(s): Staff

Writing Intensive.
EN.660.405. Intellectual Property Law. 3.0 Credits.
This course explores the acquisition, protection and commercialization of intellectual property, such as patents, trademarks, copyrights and trade secrets, and its impact on businesses and organizations. The course addresses critical issues such as the various types of intellectual property, the protection and commercialization of intellectual property by business and legal means, and the valuation of intellectual property. In addition, the tension between exclusive rights in intellectual property and free competition will be discussed throughout this course. Through interactive class discussions and a group project, students will have ample opportunity to develop a better understanding pertaining to the different types of intellectual property and to develop an intellectual property strategic plan for protecting an intellectual property portfolio. Specifically, the group project requires each team to research a selected Maryland based company's intellectual property, its plan for protection and commercialization and its business goals, products and services. Each team will then analyze how well the company's current business goals relate to its intellectual property portfolio, and recommend changes to better meet these company's goals. Not open to students who have taken EN.660.305 Intellectual Property Law. No audits.
Prerequisites: EN.660.205 Business Law I
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.660.461. Engineering Business and Management. 3.0 Credits.
An introduction to the business and management aspects of the engineering profession, project management, prioritization of resource allocation, intellectual property protection, management of technical projects, and product/production management. Preference will be given to Mechanical Engineering students. No audits. Recommended Course Background: EN.660.105
Instructor(s): Staff
Area: Engineering.

EN.660.501. Practicum In Entrepreneurship and Management. 3.0 Credits.
Students work on an existing business or marketing plan/case project under the close supervision of an Entrepreneurship and Management faculty member. Students must apply by submitting a cover letter, resume, unofficial transcript, and essay describing the business concept/marketing plan. Applications must be approved by both the faculty member and director of CLE. Students are expected to meet regularly with the faculty member and complete assigned readings and projects. Permission required. S/U only.
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

EN.661.150. Oral Presentations. 3.0 Credits.
This course is designed to help students push through any anxieties about public speaking by immersing them in a practice-intensive environment. They learn how to speak with confidence in a variety of formats and venues - including extemporaneous speaking, job interviewing, leading a discussion, presenting a technical speech, and other relevant scenarios. Students learn how to develop effective slides that capture the main point with ease and clarity, hone their message, improve their delivery skills, and write thought-provoking, well-organized speeches that hold an audience's attention. No audits.
Instructor(s): Staff
Writing Intensive.

EN.661.355. Special Topics in Professional Writing: Blogging about Food and Culture. 3.0 Credits.
Explore Baltimore's thriving food and restaurant scene while learning the art of criticism and best practices for blogging. In this journalism class taught by former New York Times Magazine editor Sarah Smith, students will study the work of some of the best writers in the field, from Laurie Colwin to Pete Wells, and using that work as a guide, write their own essays, reviews and features, which the class will discuss in a workshop setting. Instruction will include the basics of reporting and research; differences in writing for print and online media; ethics and legal concerns; and practical advice for pitching editors and setting up blogs. Recommended Course Background: At least one previous writing course.
Instructor(s): Staff
Writing Intensive.

EN.661.375. Copywriting & Creative Strategy. 3.0 Credits.
Uncover the process of creative thinking for innovation and conceiving "big ideas" in marketing. Students will be exposed to creative theory and practice as they select a consumer product and determine strategic market positioning, target demographics, media vehicles and creative guidelines. Then students will learn the craft of advertising copywriting for print, broadcast and digital media as they develop finished creative executions for the chosen organization that all build to a complete integrated marketing campaign. Co-listed with EN.660.357. No audits.
Prerequisites: EN.660.250 Principles of Marketing
Instructor(s): Staff
Writing Intensive.

EN.661.400. Practical Applications of Business Analytics. 3.0 Credits.
With higher transparency and increased sophistication in data collection, modern technology has become a central component in decision-making in all sectors of business. Unfortunately, most casual observers of this critical data are ill-equipped to meaningfully analyze this new information. This course will provide students with an overview of best practices in the field coupled with real-world examples and case studies. Recommended Course Background: EN.661.203 Business Analytics or a statistics based course prior to this course.
Instructor(s): Staff
Area: Social and Behavioral Sciences.

EN.661.425. Ethics of Biomedical Innovation. 3.0 Credits.
Engineers confront problems and make decisions that hold long term social consequences for individuals, organizations, communities and the profession. For biomedical engineers, these decisions may relate to: inventions such as medical devices and pharmaceuticals; neural prosthetics and synthetic biological organisms; responsible and sustainable design; availability of biotechnology in the developing world. Using a combination of cases, fieldwork and readings, we examine the ethical issues, standards, theory and consequences of recent and emerging engineering interventions as a way to understand the profession and to form a basis for future decisions. In addition students will learn and practice multiple forms of communication, including oral, visual and written rhetoric. A particular focus will be communication targeted to different stakeholders including other professionals and the public. Students will apply good communication principle to the discussion of biomedical engineering ethics, develop their own ethical case studies and participate in group projects to aid ethical decision-making, and to improve communication of complex biomedical ethical issues to others. Co-listed with EN.580.425.
Instructor(s): Staff
Area: Social and Behavioral Sciences
Writing Intensive.
EN.661.453. Social Media and Marketing. 3.0 Credits.
This course explores strategies for monitoring and engaging consumers in digital media. Students will gain practical knowledge about developing, implementing, and measuring social media marketing campaigns. They will learn how to analyze what consumers are saying and connect with them by leveraging word of mouth, viral and buzz marketing through sites like Facebook, Twitter and YouTube. A series of assignments build upon each other toward a final social media marketing plan for a selected consumer product or service. Co-listed with EN.660.453. No audits. 
Prerequisites: EN.660.250 Principles of Marketing; Students may receive credit for EN.661.453 or EN.660.453 but not both. 
Instructor(s): Staff
Writing Intensive.

EN.661.454. Blogging and Digital Copywriting. 3.0 Credits.
Learn how to develop, write and manage content for marketing communication on the Web and build an online presence through search engine optimization (SEO) and search engine marketing (SEM). Each student will create his/her own professional WordPress blog and gain knowledge on how to market it. They will also learn copywriting for various digital formats including Email marketing, website copy and social media while gaining an understanding of web analytics, conversion optimization, writing for keywords and mobile marketing. Recommended Course Background: one writing course in any discipline (professional communication, expository writing, or writing seminars). No audits. 
Prerequisites: EN.660.250
Instructor(s): Staff
Writing Intensive.

EN.661.610. Research Writing for International Students. 3.0 Credits.
This course is designed to help ESL writers succeed in writing, editing, and completing a large research project specific to their discipline. This could be a research report, journal article, literature review, dissertation chapter, grant proposal, or other relevant document. The course provided intensive help with grammar, idiomatic phrasing, and overall clarity for writers whose native language is not English. The course includes both individual consultation and group workshops. P/F grading only (students may elect to take this course for a traditional letter grade if their departments require them to do so; students must inform the instructor by the second week of class). No audits. 
Instructor(s): Staff
Writing Intensive.

EN.661.611. Professional Communication for ESL. 3.0 Credits.
This course teaches ESL students to communicate effectively with a wide variety of specialized and non-specialized audiences and will provide ESL-specific help with grammar, pronunciation, and idiomatic expression in these different contexts. Projects include production of resumes, cover letters, proposals, instructions, reports, and other relevant documents. Class emphasizes writing clearly and persuasively, creating appropriate visuals, developing oral presentation skills, working in collaborative groups, giving and receiving feedback, and simulating the real world environment in which most communication occurs. Not open to students who have taken EN.661.110 as Technical Communication or Professional Communication for Science, Business, and Industry or EN.661.120 Business Communication. Co-listed with EN.661.411. 
Instructor(s): Staff.

EN.661.612. Professional Writing and Communication for International Students: Financial Math. 1.5 Credits.
This course will prepare you to be competitive in the world of business by offering you some of the oral and written communication techniques you need to be successful. While working to enhance pronunciation, grammar, idiomatic expressions, and business vocabulary, you will work to speak comfortably in business social settings and meetings and to write effectively in a variety of modes not limited to e-mails, memoranda, resumes, and summary reports. The overall goal for all assignments is to speak and to write in clear, effective English. Moreover, improving oral and written communications will give you confidence, help you to make a good impression, and just maybe give you that “edge” you need to get the job you want or the project you desire once employed. Finally, individual pronunciation conferences will be scheduled with each of you throughout the semester. Financial Math students only. P/F only. No audits. 
Instructor(s): Staff.

Engineering Management
This course is designed to introduce students to key marketing, communications, and strategic issues surrounding the process of bringing new products to the marketplace. Through cases, readings, discussion and hands-on team projects, students develop a flexible approach to thinking about marketing problems, maximizing resources and creating strategic solutions. Written and oral work focuses on communicating effectively with target audiences using integrated media and developing interpersonal skills essential for managers, including presenting to a hostile audience, running meetings, listening, and contributing to group decision-making. For M.S. in Engineering Management only; graded (not P/F); no audits. 
Instructor(s): Staff.

Accounting & Financial Management

Accounting & Financial Management program offers Johns Hopkins Arts & Sciences, Engineering, and Peabody students a focused, quantitative minor that will prepare them more effectively for careers in small companies, major corporations, and consultancies as well as acceptance into graduate programs in accountancy and business.

The objective of the Minor in Accounting and Financial Management is to enable students in all disciplines to complement their major fields of study with academic training that will help them prepare for and compete within this expanding marketplace. The minor is not only relevant for students who plan to seek employment but critical for those who plan to attend graduate programs in accounting and business immediately after graduation. The Accounting and Financial Management Minor will help the CLE's graduates prepare for career opportunities in several fields that have high salaries and are predicted to grow substantially.

Students completing multiple minors:
Students must take at least three unique upper level* electives for each minor they undertake. *as defined by the CLE.

See the Undergraduate tab above for specific requirements for the minor.

Accounting & Financial Management Minor Requirements

- Four core courses: Introduction to Business, Financial Accounting, Professional Writing & Communication OR Oral Presentations & Business Analytics*
• Three upper-level courses; one course must be at the 400-level.

**Students completing multiple minors:**

Students must take at least three unique upper level* electives for each minor they undertake. *as defined by the CLE.

**Core Requirements:**

All four courses are required.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.660.105</td>
<td>Introduction to Business</td>
<td>4</td>
</tr>
<tr>
<td>EN.660.203</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.110</td>
<td>Professional Writing and Communication</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.250</td>
<td>Oral Presentations</td>
<td></td>
</tr>
<tr>
<td>EN.661.380</td>
<td>Business Analytics (***Business Analytics can be replaced by one intermediate/advanced calc-based statistics course or two elementary statistics courses.)</td>
<td>3</td>
</tr>
</tbody>
</table>

*Students are encouraged to fulfill the Business Analytics requirement, but will be allowed to substitute statistics course(s) by choosing one of the two options listed below. Students can substitute AP Statistics for Stat I, but not Stat II.

**Students cannot substitute AP Economics for Microeconomics**

**Option One:** for students who wish to replace Business Analytics with Statistics:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.111</td>
<td>Statistical Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.230.205</td>
<td>Introduction to Social Statistics</td>
<td></td>
</tr>
<tr>
<td>or AS.280.345</td>
<td>Public Health Biostatistics</td>
<td></td>
</tr>
<tr>
<td>EN.553.112</td>
<td>Statistical Analysis II</td>
<td>4</td>
</tr>
</tbody>
</table>

**Option Two:** for students who wish to replace Business Analytics with Statistics:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.540.305</td>
<td>Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers</td>
<td>3</td>
</tr>
<tr>
<td>or EN.553.211</td>
<td>Probability and Statistics for the Life Sciences</td>
<td></td>
</tr>
<tr>
<td>or EN.553.310</td>
<td>Probability &amp; Statistics</td>
<td></td>
</tr>
<tr>
<td>or EN.553.430</td>
<td>Introduction to Statistics</td>
<td></td>
</tr>
<tr>
<td>or EN.560.348</td>
<td>Probability &amp; Statistics in Civil Engineering</td>
<td></td>
</tr>
</tbody>
</table>

**Upper-level Electives:**

Three upper-level courses; one course must be at the 400-level.

While the CLE currently offers only one 400-level course in this area, students occasionally take advanced classes at other universities.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.180.263</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.300</td>
<td>Managerial Finance</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.303</td>
<td>Managerial Accounting</td>
<td></td>
</tr>
<tr>
<td>EN.660.414</td>
<td>Financial Statement Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

**Course and Grade Rules and Limitations:**

The Accounting & Financial Management minor requires a minimum of 22 credits.

A maximum of 6 credits of courses taken from outside WSE and KSAS (including transfer course & study abroad) may be applied to the A&FM minor.

A maximum of 3 credits may be taken on an S/U basis, after freshman Fall semester.

All courses applied to the A&FM minor must be completed with a grade of C- or above.

**Master of Science in Engineering Management**

https://engineering.jhu.edu/cle/programs-minors/em_minor/

The Master of Science in Engineering Management (MSEM) degree program combines advanced course work in highly-specialized technical fields with a professional education in contemporary business, entrepreneurship, and management practices. Graduates of the program will be provided with the educational background to pursue professional management roles in industry.

**Facilities**

The MSEM program has a dedicated seminar room housed in Whitehead 105. Students are able to study, conduct research and build prototypes within this space.

**Graduate Requirements**

Please consult directly with the MSEM program director or MSEM academic advisor to confirm the below requirements; changes may have occurred since this annual publication.

Students in the MSEM program take ten courses to fulfill degree requirements, with the following guidelines:

- Five advanced courses in the engineering/technical concentration
- Three full-fall semester management courses, fall and spring MSEM Seminar courses, two half-semester required courses in the spring plus students may choose from a list of approved half-semester courses to complete their electives.
- No grade lower than C may be applied to the program
- Courses must be at the graduate level
- Departments sponsoring technical concentrations may impose stricter requirements for course work within the concentration
- Students are additionally required to complete Academic Ethics (EN.500.603), which does not count towards the degree requirements above.

At the discretion of the student’s advisors, an MSEM student may be permitted to double-count up to two JHU courses (one for the technical concentration and one for the management concentration) or apply graduate courses taken at JHU or elsewhere but not applied to a degree, in accordance with conditions in the WSE Policy on Double-Counting Courses.

**Advising**

MSEM students will receive advising on the engineering/technical concentration from a designated faculty member affiliated with that concentration. MSEM students will be advised regarding the management concentration by members of the Center for Leadership Education faculty.

**Faculty**

Faculty members teaching the technical concentration courses are listed in their respective engineering departments elsewhere in this catalog.
Faculty members teaching the management concentration courses are listed in the Center for Leadership Education section of this catalog.

Management Concentration
The Center for Leadership Education has constructed a five-course program tailored to the needs of future engineering managers. MSEM students will participate in a cohort program, which begins each fall, where all students in an entering class will take the following suite of management courses together:

In addition, all MSEM students are required to attend the MSEM Seminar course while enrolled in the program. This will meet weekly and addresses three important content areas: Innovation and design thinking; personal skills and development especially in the communication arena; and talks with practicing engineering managers. The Engineering Management program reserves the right to change the list of eligible courses at its discretion.

Internship Option
MSEM Course # EN.662.802: Engineering Management Internship Assessment

This course involves the assessment of a student's internship experience via a report and oral presentation. The questions and general format of the report and presentation will be provided by the instructor (http://memp.pratt.duke.edu/sites/memp.pratt.duke.edu/files/EGRMgmt_551_External.doc). The report and presentation will be evaluated by the instructor and both must be approved to obtain credit for this course. One full course may count toward graduation.

Technical Concentrations
In addition to fulfilling the management concentration requirements, MSEM students must complete the requirements for one of fifteen technical concentrations. These are:

- Biomaterials
- Chemical & Biomolecular Engineering
- Civil Engineering
- Communications Science
- Computer Science
- Fluid Mechanics
- Materials Science and Engineering
- Mechanical Engineering
- Mechanics and Materials
- Nano-Biotechnology
- Nanomaterials and Nanotechnology
- Operations Research
- Probability and Statistics
- Smart Product and Device Design
- Environmental Systems Analysis, Economics and Public Policy

Biomaterials
(Sponsored by the Department of Materials Science & Engineering (p. 911))

Prerequisites
- UG calculus, chemistry, biology, physics and introductory biomaterials course equivalent to EN.510.316 Biomaterials I

Required Courses (3)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.606</td>
<td>Polymer Chemistry &amp; Biology</td>
<td>3</td>
</tr>
</tbody>
</table>

Substitutions for required courses can be made at the advisor’s discretion.

Electives (2)
- Electives should be related to Materials Science and Engineering and must be approved by the DMSE graduate committee
- See list of pre-approved elective courses or courses off list by petition

List of Pre-approved Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.607</td>
<td>Biomaterials II: Host response and biomaterials applications</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.621</td>
<td>Biomolecular Materials I - Soluble Proteins and Amphiphiles</td>
<td>3</td>
</tr>
</tbody>
</table>

The Civil Engineering concentration for the Master of Science in Engineering Management consists of five courses, with the following guidelines:

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.560.730</td>
<td>Finite Element Methods</td>
<td>3</td>
</tr>
<tr>
<td>EN.560.604</td>
<td>Introduction to Solid Mechanics</td>
<td>3</td>
</tr>
</tbody>
</table>

Substitutions for required courses can be made at the advisor’s discretion.

Elective Courses
- Any two courses from 560.6xx or above, or 565.6xx or above (excluding seminar)

Chemical and Biomolecular Engineering
(Sponsored by the Department of Electrical & Computer Engineering)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.540.671</td>
<td>Advanced Thermodynamics in Practice</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.604</td>
<td>Transport Phenomena in Practice</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.673</td>
<td>Advanced Chemical Reaction Engineering in Practice</td>
<td>3</td>
</tr>
</tbody>
</table>
1.

Substitutions for required courses can be made at the advisor's discretion.

Elective Courses: Any two courses from 540.6xx or above, or 545.6xx or above (excluding seminar)

Courses not on this list can be approved at the advisor's discretion.

**Communications Science**  
*(Sponsored by the Department of Electrical & Computer Engineering (p. 854))*

Students may select any combination of 5 courses in communications and related fields from the list below.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.435</td>
<td>Digital Signal Processing</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.447</td>
<td>Information Theory</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.465</td>
<td>Digital Communications I</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.646</td>
<td>Wavelets &amp; Filter Banks</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.651</td>
<td>Random Signal Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.520.652</td>
<td>Extraction of Signals from Noise</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.666</td>
<td>Information Extraction</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.735</td>
<td>Sensory Information Processing</td>
<td>3</td>
</tr>
</tbody>
</table>

Substitutions for required courses can be made at the advisor's discretion.

**Computer Science**  
*(Sponsored by the Department of Computer Science (p. 821))*

Curricular Requirements

- Any five regular graduate courses approved by the advisor, 400-level or higher, from the Department of Computer Science, not including the senior thesis. Three 1-credit graduate courses may be combined to constitute one regular graduate course.

**Fluid Mechanics**  
*(Sponsored by the Department of Mechanical Engineering (p. 932))*

Any five courses in Fluid Mechanics or closely related discipline, at the 400-level or higher, as approved by the Faculty advisor. At least two of the required technical courses must be at the 600-level or higher.

**Materials Science & Engineering**  
*(Sponsored by the Department of Materials Science & Engineering (p. 911))*

**Prerequisites**

- UG calculus, chemistry and physics; biology is recommended

**Required Courses (1)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.601</td>
<td>Structure Of Materials</td>
<td>3</td>
</tr>
</tbody>
</table>

Substitutions for required courses can be made at the advisor's discretion.

**Electives (4)**

- See list of pre-approved elective courses or courses off list by petition

**Recommended Structure**

- Electives:

**List of Pre-approved Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.400</td>
<td>Introduction to Ceramics</td>
<td>3</td>
</tr>
</tbody>
</table>

EN.510.403   Materials Characterization     3  
EN.510.405   Materials Science of Energy Technologies     3  
EN.510.422   Micro and Nano Structured Materials & Devices     3  
EN.510.426   Biomolecular Materials I - Soluble Proteins and Amphiphiles     3  
EN.510.428   Material Science Laboratory I     3  
EN.510.429   Material Science Laboratory II     3  
EN.510.430   Biomaterials Lab     3  
EN.510.604   Mechanical Properties of Materials     3  
EN.510.605   Electrical, Optical and Magnetic Properties of Materials     3  
EN.510.606   Polymer Chemistry & Biology     3  
EN.510.607   Biomaterials II: Host response and biomaterials applications     3  
EN.510.608   Electrochemistry     3  
EN.510.611   Solid State Physics     3  
EN.510.612   Solid State Physics     3  
EN.510.657   Materials Science of Thin Films     3  

Alternative selections can be made at the advisor's discretion.

**Mechanical Engineering**  
*(Sponsored by the Department of Mechanical Engineering (p. 932))*

**Required Courses**

Any five courses in Mechanical Engineering or closely related discipline at the 400-level or higher, as approved by the Faculty advisor. At least two of the required technical courses must be at the 600-level or higher.

Alternative selections can be made at the advisor's discretion.

**Mechanics and Materials**  
*(Sponsored jointly by the Department of Mechanical Engineering (p. 932) and the Department of Materials Science & Engineering (p. 911))*

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.601</td>
<td>Structure Of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.604</td>
<td>Mechanical Properties of Materials</td>
<td>3</td>
</tr>
</tbody>
</table>

Substitutions for required courses can be made at the advisor's discretion.

**Elective Courses**

Any two (2) of the following courses, approved by the faculty advisor:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.403</td>
<td>Materials Characterization</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.428</td>
<td>Material Science Laboratory I</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.405</td>
<td>Mechanics of Advanced Engineering Structures</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.414</td>
<td>Computer-Aided Design</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.418</td>
<td>Aerospace Structures &amp; Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.602</td>
<td>Thermodynamics Of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.603</td>
<td>Phase Transformations of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.612</td>
<td>Computational Solid Mechanics</td>
<td>3</td>
</tr>
</tbody>
</table>

Alternative selections can be made at the advisor's discretion.

**Nano-Biotechnology**  
*(Sponsored by the Department of Materials Science & Engineering (p. 911))*
Prerequisites

- UG calculus, chemistry, biology, physics and introductory biomaterials course equivalent to EN.510.316

Required Courses (3)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.422</td>
<td>Micro and Nano Structured Materials &amp; Devices</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.607</td>
<td>Biomaterials II: Host response and biomaterials applications (PR: EN.510.316 or permission)</td>
<td>3</td>
</tr>
<tr>
<td>EN.670.619</td>
<td>Fundamental Physics and Chemistry of Nanomaterials</td>
<td>3</td>
</tr>
</tbody>
</table>

Substitutions for required courses can be made at the advisor’s discretion.

Electives (2)

- Electives should be related to Materials Science and Engineering and must be approved by the DMSE graduate committee
- See list of pre-approved elective courses or courses off list by petition

Recommended Structure

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.422 Micro and Nano Structured Materials &amp; Devices</td>
<td>3</td>
<td>EN.510.607 Biomaterials II: Host response and biomaterials applications</td>
<td>3</td>
</tr>
<tr>
<td>EN.670.619 Fundamental Physics and Chemistry of Nanomaterials</td>
<td>3</td>
<td></td>
<td></td>
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</tbody>
</table>

Electives: suggest one

See list of pre-approved elective courses or courses off list by petition

Total Credits: 6

List of Pre-approved Electives

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>EN.510.400</td>
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</tr>
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</tr>
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<td>Biomaterials Lab</td>
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<td>Mechanical Properties of Materials</td>
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</tr>
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</tr>
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<td>Polymer Chemistry &amp; Biology</td>
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<td>Solid State Physics</td>
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</tr>
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</tr>
<tr>
<td>EN.510.657</td>
<td>Materials Science of Thin Films</td>
<td>3</td>
</tr>
</tbody>
</table>

Alternative selections can be made at the advisor’s discretion.

Nanomaterials and Nanotechnology

(Sponsored by the Department of Materials Science & Engineering (p. 911))

Prerequisites

- UG calculus, chemistry, and physics

Recommended Structure

<table>
<thead>
<tr>
<th>Fall</th>
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Substitutions for required courses can be made at the advisor’s discretion.

Electives (3)

- Electives should be related to Materials Science and Engineering and must be approved by the DMSE graduate committee
- See list of pre-approved elective courses or courses off list by petition

Recommended Structure

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List of Pre-approved Electives

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<td>Electrical, Optical and Magnetic Properties of Materials</td>
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<td>EN.510.606</td>
<td>Polymer Chemistry &amp; Biology</td>
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<td>EN.510.657</td>
<td>Materials Science of Thin Films</td>
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</tbody>
</table>

Operations Research

(Sponsored by the Department of Applied Mathematics & Statistics (p. 691))

Prerequisites

Calculus-based background in Probability and Statistics. Students wishing to strengthen their background in this area may enroll in EN.553.420 Introduction to Probability and/or EN.553.430 Introduction
to Statistics, but these courses may not be used in fulfillment of this concentration's requirements.

Substitutions for required courses can be made at the advisor's discretion.

Elective Courses (2)
Any two courses from the following list, or a substitution as approved by the student's concentration advisor. As course offerings vary over time, an updated list of acceptable courses will be maintained on the MSEM program website.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.493</td>
<td>Economic Foundations for Environmental Engineering and Policy Design</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.496</td>
<td>Urban and Environmental Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.426</td>
<td>Introduction to Stochastic Processes</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.427</td>
<td>Stochastic Processes and Applications to Finance</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.433</td>
<td>Monte Carlo Methods</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.463</td>
<td>Network Models in Operations Research</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.762</td>
<td>Nonlinear Optimization II</td>
<td>3</td>
</tr>
</tbody>
</table>

Alternative selections can be made at the advisor's discretion.

Probability and Statistics
(Sponsored by the Department of Applied Mathematics & Statistics (p. 691))

Admissions Requirements
- One upper-division undergraduate course in probability (equivalent to EN.553.420 Introduction to Probability)
- One upper-division undergraduate course in mathematical statistics (equivalent to EN.553.430 Introduction to Statistics)

Curricular Requirements
Any five (5) of the following courses, approved by the faculty advisor.

Additional Requirements
- An overall GPA of 3.0 must be maintained in courses used to meet the program's technical requirements. At most two course grades of C or C+ are allowed to be used, and the rest of the course grades must be B- or better.
- Students must satisfy the department's graduate student computing requirement.
- With advisor's approval, one non-departmental course containing appropriate mathematical or statistical content can be counted to satisfy the five course requirement.

Smart Product and Device Design
(Sponsored jointly by the Department of Mechanical Engineering (p. 932) and the Department of Electrical & Computer Engineering (p. 854))

Required Courses
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.646</td>
<td>Robot Devices, Kinematics, Dynamics, and Control</td>
<td>4</td>
</tr>
<tr>
<td>EN.530.414</td>
<td>Computer-Aided Design</td>
<td>3</td>
</tr>
<tr>
<td>or EN.520.491</td>
<td>CAD Design of Digital VLSI Systems I (Juniors/Seniors)</td>
<td></td>
</tr>
<tr>
<td>EN.530.421</td>
<td>Mechatronics</td>
<td>3</td>
</tr>
</tbody>
</table>

Substitutions for required courses can be made at the advisor's discretion.

Elective Courses
Any two (2) courses approved by the faculty advisor.

Environmental Systems Analysis, Economics and Public Policy
(Sponsored by the Department of Environmental Health and Engineering (p. 878))

Required Courses (3)
At least one course from each of the three following groups:

- Economics (with calculus)—acceptable courses include EN.570.493 Economic Foundations for Environmental Engineering and Policy Design or equivalent. (This requirement may be waived if the student has already had an intermediate microeconomics course accepted by their advisor)
- Mathematics of Decision Making—acceptable courses include EN.570.495 Environmental Health and Engineering Systems Design and EN.570.497 Risk and Decision Analysis
- Policy—EN.570.607 Energy Policy and Planning Models

Substitutions for required courses can be made at the advisor's discretion.

Elective Courses (2)
Any of the courses listed in the Mandatory list (see Part A above)

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN.570.496</td>
<td>Urban and Environmental Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.618</td>
<td>Multiobjective Programming and Planning</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.676</td>
<td>Stochastic Programming</td>
<td>3</td>
</tr>
</tbody>
</table>

Other courses in environmental economics, systems, or policy, as approved by the advisor.

Additional Notes
- All courses must be approved by the student's advisor.
- All course must be at the graduate level
- Students with a background in quantitatively rigorous economics sufficient for the economics requirement to be waived must still take five (5) courses in this area of concentration.
- No more than one course in environmental engineering may be used to fulfill the area of concentration and only with careful consultation with the student's advisor. Candidate courses in environmental engineering include:
  - EN.570.446 Biological Process of Wastewater Treatment, EN.570.490 Solid Waste Engineering and Management, EN.570.491 Hazardous Waste Engineering and Management, EN.570.647 Hydrologic Transport in the Environment, EN.570.657 Air Pollution, etc.
- No more than one C may be used toward the degree in this concentration.

For current faculty and contact information go to https://engineering.jhu.edu/cle/faculty/

Faculty
Program Directors
Pamela Sheff
Director of the Master of Science in Engineering Management Program & Senior Lecturer
business and technical communication, marketing, public relations, science and scientific writing, oral presentations, entrepreneurship.

Senior Lecturer
Lawrence Aronhime
W.P. Carey Minor in Entrepreneurship and Management

http://engineering.jhu.edu/cle

The Entrepreneurship & Management (E&M) program offers Johns Hopkins Arts & Sciences, Engineering, and Peabody students a broad array of courses designed to equip them to lead in business, professional, and academic arenas. Some students simply take a course or two. Many choose to fulfill the seven-course E&M minor, pairing it with their engineering, liberal arts, or public health major. The minor's three core courses, Introduction to Business, Financial Accounting, and Marketing Principles, provide a strong foundation in the fundamentals of entrepreneurial enterprises. Students can then select any three upper-level courses (plus the required work in statistics) to complete the minor or elect to focus further in Accounting and Finance, Business Law, Leadership and Organizational Behavior, or Professional Communication.

The minor in entrepreneurship and management focuses on business and management from a multidisciplinary viewpoint, with a quantitative emphasis. The program, part of the Center for Leadership Education (p. 758), offers students a diversified learning experience that emphasizes the concepts, practices, and skills necessary for effective leadership as managers and entrepreneurs in the public and private sectors.

The primary goal of the program is to provide Hopkins students with the knowledge and skills to become effective leaders and entrepreneurs. Individuals with excellent technical training and abilities often move into management positions or start new ventures. As their careers progress, they will be better prepared for success if they have the ability to understand financial reports, interpret statistical data, organize and effectively lead a team, design strategy, analyze and correct problems in the firm’s operations, and understand the dynamics of the marketplace.

The minor is purposely designed to serve different types of students. The program will help prepare students for entrance to law school, an MBA program, or other graduate school. After graduation, other students will start working in engineering or technical positions, then later move into management or start their own businesses. A third group of students is primarily interested in gaining knowledge to follow more generalized careers in finance and business.

Students completing multiple minors:

Students must take at least three unique upper level* electives for each minor they undertake. *as defined by the CLE.

Core Requirements
1. Statistics - These courses expose students to the foundations of statistics that are used extensively in business decision-making. These topics include correlation, estimation, hypothesis testing, linear regression, prediction, and forecasting. Students may take either two elementary statistics courses or one intermediate/advanced calculus-based statistics course from the list below.

Option One: Two Elementary Statistics Courses (EN.550.112 is the required second course). Credit earned for AP Statistics (equivalent to EN.550.111) will satisfy the first of the two required courses.

EN.553.111 Statistical Analysis I 4
or AS.230.205 Introduction to Social Statistics
or AS.280.345 Public Health Biostatistics
EN.553.112 Statistical Analysis II 4

Option Two: One Intermediate/Calculus-Based Course (must have Calculus as a prerequisite)

EN.553.211 Probability and Statistics for the Life Sciences 4
or EN.553.310 Probability & Statistics
or EN.553.311 Probability and Statistics for the Biological Sciences and Engineering
or EN.553.430 Introduction to Statistics
or EN.540.305 Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers
or EN.560.348 Probability & Statistics in Civil Engineering

2. Entrepreneurship and Management Fundamentals - Students must complete three fundamental courses in entrepreneurship and management. These courses are:

EN.660.105 Introduction to Business 4
EN.660.203 Financial Accounting 3
EN.661.110 Professional Writing and Communication 3
or EN.661.250 Oral Presentations

3. Upper-Level Elective Courses in Entrepreneurship and Management
Students must complete three upper level courses in entrepreneurship and management. Courses may be chosen from a number of areas, including:

**Accounting & Finance** - These courses educate students about financial concepts, investments, and financial markets. This information is valuable for the entrepreneur starting a new venture, a manager to be effective with a corporation, and management consultants.

**Business Law** - These courses educate students about legal issues in business and how the law is used to protect intellectual property.

**Leadership & Organizational Behavior** - These courses provide knowledge of both general principles and specific practices needed for working effectively with people in an organization. These courses focus on leadership, team building, ethics, and psychology.

Students who wish to complete a focus area in one of the areas listed above must complete three courses from that area, with at least one at the 400-level.

Lists of acceptable courses are provided below. These lists are regularly updated and may be obtained at the Center for Leadership Education office or on the center’s website [https://engineering.jhu.edu/cle/programs-minors/em_minor](https://engineering.jhu.edu/cle/programs-minors/em_minor).

### Accounting and Finance Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.660.300</td>
<td>Managerial Finance</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.303</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.410</td>
<td>Computer Science Innovation and Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.414</td>
<td>Financial Statement Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.460</td>
<td>Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>AS.180.263</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.334</td>
<td>Engineering Microeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

* The course 232.410 Corporate Finance from the Carey Business School may also be used as an Accounting and Finance course.

### Business Law Courses

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>EN.660.308</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.310</td>
<td>Case Studies in Business Ethics</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.311</td>
<td>Law and the Internet</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.404</td>
<td>Business Law II</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.405</td>
<td>Intellectual Property Law</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.460</td>
<td>Entrepreneurship</td>
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### Leadership and Organizational Behavior Courses

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<tr>
<td>EN.660.321</td>
<td>Managing &amp; Marketing Social Enterprises</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.329</td>
<td>Social Entrepreneurship Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Community Based Learning</td>
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<tr>
<td>EN.660.331</td>
<td>Leading Teams</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.332</td>
<td>Leadership Theory</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.333</td>
<td>Leading Change</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.335</td>
<td>Negotiation and Conflict Resolution</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.340</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.341</td>
<td>Business Process and Quality Management</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.361</td>
<td>Engineering Business and Management</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or EN.660.461 Engineering Business and Management</td>
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### Marketing and Communication Courses

Students may use only one Marketing and Communications course as an upper-level elective for the Entrepreneurship and Management minor.

<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.660.310</td>
<td>Case Studies in Business Ethics</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.352</td>
<td>New Product Development</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.355</td>
<td>Sports Marketing</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.358</td>
<td>International Marketing</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.420</td>
<td>Marketing Strategy</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.450</td>
<td>Advertising &amp; Integrated Marketing Communication</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.315</td>
<td>Culture of the Engineering Profession</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.317</td>
<td>Culture of the Medical Profession</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.357</td>
<td>Copywriting &amp; Creative Strategy</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.361</td>
<td>Corporate Communications &amp; P.R.</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.453</td>
<td>Social Media and Marketing</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.454</td>
<td>Blogging and Digital Copywriting</td>
<td>3</td>
</tr>
</tbody>
</table>

### Course and Grade Rules and Limitations

The E&M minor requires a minimum of 22 credits.

A maximum of 6 credits of courses taken from outside WSE and KSAS (including transfer course & study abroad) may be applied to the E&M minor.

One course may be taken on an S/U basis.

All courses applied to the E&M minor must be completed with a grade of C- or above.

For current faculty and contact information go to [http://engineering.jhu.edu/cle/faculty](http://engineering.jhu.edu/cle/faculty)

### Faculty

**Director**

Timothy Weihs

Director of CLE, Professor of Materials Science & Engineering.

**Program Directors**

Lawrence Aronhime

Senior Lecturer & Director of International Programs: accounting, finance, entrepreneurship, technology commercialization.

Annette Leps

Senior Lecture and Director of Entrepreneurship & Management Program: accounting, finance, management.

Julie Reiser

Senior Lecturer & Director of Marketing & Communications: technical communication, oral presentations, research writing, dissertation writing, American literature and critical theory.

Eric Rice

Senior Lecturer & Director of Graduate Programs: organizational behavior, social entrepreneurship, management, negotiation and conflict management, leadership, public speaking, professional writing.

Pamela Sheff

Senior Lecturer & Director of Master of Science in Engineering Management Program: business and technical communication, marketing, public relations, science and scientific writing, oral
presentations, higher education in prisons, community-based learning, entrepreneurship.

**Full Time Faculty**

Bob Graham  
Lecturer: entrepreneurship, professional communication, oral presentations.

Illysa Izenberg  
Lecturer: engineering management.

Leslie Kendrick  
Senior Lecturer: marketing strategy, integrated marketing communications, sports marketing, international marketing, internships.

Charlotte O'Donnell  
Lecturer: oral presentations, professional communication, visual rhetoric.

William Smedick  
Senior Lecturer: leadership theory, leadership in teams.

**Part Time Faculty**

Michael Agronin  
Lecturer: new product development.

Justin Beauchamp  
Lecturer: Leadership

Jennifer Bernstein  
Lecturer: professional communication.

Susan Conley  
Lecturer: Marketing

Laura Davis  
Lecturer: Professional communication for ESL and Oral presentations for ESL.

Marci DeVries  
Lecturer: marketing.

Kevin Dungey  
Senior Lecturer: oral presentations.

Sean Furlong  
Lecturer: Financial Accounting

David Fisher  
Lecturer: business law.

Mark Franceschini  
Senior Lecturer: business law, business ethics, Internet law.

Mary Beth Furst  
Lecturer: Introduction to Business.

Guido Galvez  
Lecturer: business.

Jeremy Gorelick  
Lecturer: business analytics, business development.

Christine Grillo  
Lecturer: writing articles, writing technical reports.

Jason Heiseman  
Lecturer: oral presentations.

Christopher Jeffers  
Lecturer: business law.

Mark Kennedy  
Lecturer: copywriting.

Andrew Kulanko  
Senior Lecturer: oral presentations.

Andres Lares  
Lecturer: sports negotiation.

Seth LeJacq  
Lecturer: communication

Denise Link-Farajali  
Lecturer: professional communication: financial math for ESL, research writing for ESL.

David Mahoney  
Lecturer: social media, marketing.

Michael Mattia  
Lecturer: leadership.

Lindsay Monti  
Lecturer: business law.

Marco Priolo  
Lecturer: managerial finance.

Bryan Rakes  
Lecturer: business law.

Joshua J. Reiter  
Senior Lecturer: business process management, total quality management, information technology management, Internet-based business applications, creativity and innovation, entrepreneurship.

Elaine Richman  
Lecturer: writing articles, writing technical reports.

Tiffany Sanchez  
Lecturer: leadership.

Douglas Sandhaus  
Senior Lecturer: business law, business ethics, Internet law.

Dennis Sullivan  
Lecturer: marketing.

Jay Thompson  
Lecturer: professional communication.

Adam Treiser  
Lecturer: business analytics.

Tamara Warren-Chinyani  
Lecturer: emotional intelligence, diversity.

Caroline Wilkins  
Lecturer: professional communication.
Marketing and Communications

The Marketing & Communications (M&C) program offers Johns Hopkins Arts & Sciences, Engineering and Peabody students a broad array of courses designed to equip them to lead in the marketing and communications fields, and complements major courses of study in departments across campus. Students who opt to declare the minor will choose between two tracks: the Marketing Management track and the Integrated Marketing Communications track. Courses are also open to students who choose not to declare the minor.

The Marketing Management track is geared towards students who wish to pursue a career in product or marketing management at a large-scale enterprise. This track emphasizes learning how to manage both the message and the financial impact of marketing campaigns, as well as how to manage a product line from development to launch.

The Integrated Marketing Communications track is designed for students who want to be more involved in the creative side of the marketing field, including areas such as advertising, public relations and social media. This track emphasizes forming marketing messages, and the production of creative content and deliverables for a variety of different industries.

See the Undergraduate tab above for specific requirements for the minor.

Marketing and Communications Minor Requirements

• Three core courses  
• One foundational course  
• Four upper-level courses in the desired track; one course must be at the 400-level.

Please note: Students must take at least three unique upper-level electives* for each minor they undertake within the CLE.

*as defined by the CLE

Core courses; all three required

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN.660.105</td>
<td>Introduction to Business</td>
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</tr>
<tr>
<td>EN.660.203</td>
<td>Financial Accounting</td>
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<tr>
<td>EN.661.110</td>
<td>Professional Writing and Communication</td>
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<tr>
<td>or EN.661.111</td>
<td>Professional Writing and Communication for International Students</td>
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</table>

Foundational course for both tracks

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>EN.660.250</td>
<td>Principles Of Marketing</td>
<td>3</td>
</tr>
</tbody>
</table>

Upper-level electives; four courses required, at least one at 400-level

Please note that there are several new upper-level courses in development for the tracks listed below. Check the website for any changes when the new courses have been activated.

Marketing Management Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
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<td>EN.661.380</td>
<td>Business Analytics</td>
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<td>EN.660.352</td>
<td>New Product Development</td>
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<td>EN.660.355</td>
<td>Sports Marketing</td>
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<td>EN.660.358</td>
<td>International Marketing</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.420</td>
<td>Marketing Strategy</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.450</td>
<td>Advertising &amp; Integrated Marketing Communication</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.453</td>
<td>Social Media and Marketing</td>
<td>3</td>
</tr>
</tbody>
</table>

Integrated Marketing Communications Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.661.250</td>
<td>Oral Presentations</td>
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</tr>
<tr>
<td>or EN.661.251</td>
<td>Oral Presentations for International Students</td>
<td></td>
</tr>
<tr>
<td>EN.661.370</td>
<td>Visual Rhetoric</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.310</td>
<td>Case Studies in Business Ethics</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.357</td>
<td>Copywriting and Creative Strategy</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.450</td>
<td>Advertising &amp; Integrated Marketing Communication</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.453</td>
<td>Social Media and Marketing</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.301</td>
<td>Writing for the Law</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.306</td>
<td>Special Topics in Professional Writing: Freelance Travel Writing</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.315</td>
<td>Culture of the Engineering Profession</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.317</td>
<td>Culture of the Medical Profession</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.355</td>
<td>Special Topics in Professional Writing: Blogging about Food and Culture</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.361</td>
<td>Corporate Communications &amp; P.R.</td>
<td>3</td>
</tr>
<tr>
<td>EN.661.454</td>
<td>Blogging and Digital Copywriting</td>
<td>3</td>
</tr>
</tbody>
</table>

Course and Grade Rules and Limitations

The Marketing and Communications minor requires 25 credits for the Marketing Management track and 28 credits for the Integrated Marketing Communications track.

A maximum of 6 credits of courses taken from outside WSE and KSAS (including transfer course & study abroad) may be applied to the M&C minor.

A maximum of three credits may be taken on an S/U basis.

All courses applied to the M&C minor must be completed with a grade of C- or above.

Faculty

Director

Pamela Sheff

Program Directors

Lawrence Aronhime  
Senior Lecturer & Director of International Programs: accounting, finance, entrepreneurship, technology commercialization.

Annette Leps  
Senior Lecturer & Director of the Accounting & Financial Management and Entrepreneurship & Management Programs: accounting, finance, management.

Julie Reiser  
Senior Lecturer & Director of the Marketing & Communication Program: technical communication, oral presentations, research writing, dissertation writing, American literature and critical theory.

Eric Rice  
Senior Lecturer & Director of the Professional Development Program: organizational behavior, social entrepreneurship, management, negotiation and conflict management, leadership, public speaking, professional writing.
Marketing and Communications

Pamela Sheff
Senior Lecturer & Director of the Master of Science in Engineering Management Program: business and technical communication, marketing, public relations, science and scientific writing, oral presentations, higher education in prisons, community-based learning, entrepreneurship.

Full Time Faculty
Bob Graham
Lecturer: entrepreneurship, professional communication, oral presentations.

Illysa Izenberg
Lecturer: engineering management.

Leslie Kendrick
Senior Lecturer: marketing strategy, integrated marketing communications, sports marketing, international marketing, internships.

Charlotte O'Donnell
Lecturer: oral presentations, professional communication, visual rhetoric.

William Smedick
Senior Lecturer: leadership theory, leadership in teams.

Part Time Faculty
Michael Agronin
Lecturer: new product development.

Jennifer Bernstein
Lecturer: professional communication.

Alexander Cocron
Lecturer: management, technology consulting.

Mary Clare Coghlan
Lecturer: leadership.

Anne Colgan
Lecturer: ESL consulting.

Susan Conley
Lecturer: marketing.

Laura Davis
Lecturer: professional communication for ESL, oral presentations for ESL.

Kevin Dungey
Senior Lecturer: oral presentations.

Shelley Etzine
Lecturer: professional communication for ESL.

David Fisher
Lecturer: business law.

Tavish Forsyth
Lecturer: improv.

Mark Franceschini
Senior Lecturer: business law, business ethics, Internet law.

Sean Furlong
Lecturer: financial accounting.

Guido Galvez
Lecturer: business.

Herman Goodyear
Lecturer: project management.

Daniel Hake
Margaret Hart
Lecturer: communications.

Michael Hartwell
Lecturer: improv.

Jason Heiserman
Lecturer: oral presentations.

Christopher Jeffers
Lecturer: business law.

Andrew Kulanko
Senior Lecturer: oral presentations.

Andres Lares
Lecturer: sports negotiation.

Denise Link-Farajali
Lecturer: professional communication: financial math for ESL, research writing for ESL.

David Long
Lecturer: management, technology consulting.

Trevor Mackesey
Lecturer: communications, oral presentations.

David Mahoney
Lecturer: social media, marketing.

Lindsay Monti
Lecturer: business law.

Heather Parker
Lecturer: dissertation writing.

Marco Priolo
Lecturer: managerial finance.

Bryan Rakes
Lecturer: business law.

Joshua J. Reiter
Senior Lecturer: business process management, total quality management, information technology management, Internet-based business applications, creativity and innovation, entrepreneurship.

Tiffany Sanchez
Lecturer: leadership.

Douglas Sandhaus
Senior Lecturer: business law, business ethics, Internet law.

Adam Treiser
Lecturer: business analytics.

Caroline Wilkins
Lecturer: professional communication.
Professional Communication Program

https://engineering.jhu.edu/cle/

Strong communications skills are the key to success in any discipline. The Professional Communication Program (PCP) offers Johns Hopkins undergraduates a variety of hands-on courses designed to develop their abilities to research, write, speak, and display data persuasively. Starting with the highly popular foundation courses EN.661.110 Professional Writing and Communication and EN.661.150 Oral Presentations, the program expands to specialized workshops and seminars on topics ranging from science and research writing, engineering culture and ethics to entrepreneurship, public relations and social media. PCP students create journals, write blogs, present pitches and posters, and conduct multimedia PR campaigns. All PCP courses are small—19 or fewer students—ensuring that everyone receives the skilled attention necessary to grow as a writer and presenter. Since many of our students are international, PCP offers English as a Second Language (ESL) sections of Professional Writing and Communication and Oral Presentations as well as free ESL tutoring.

For current faculty and contact information go to https://engineering.jhu.edu/cle/faculty/

Faculty

Program Director
Julie Reiser
Senior Lecturer, Director of Marketing and Communications: technical communication, oral presentations, research writing, dissertation writing, American literature and critical theory.

Full Time Faculty

Bob Graham
Lecturer: entrepreneurship, professional communications, oral presentations.

Leslie Kendrick
Senior Lecturer: marketing strategy, integrated marketing communications, sports marketing, international marketing.

Charlotte O'Donnell
Lecturer: oral presentations, professional communication, visual rhetoric.

Eric Rice
Senior Lecturer & Director of Graduate Programs: organizational behavior, social entrepreneurship, management, negotiation and conflict management, leadership, public speaking, professional writing.

Pamela Sheff
Director of Center for Leadership Education and Director of Master of Science in Engineering Management Program: business and technical communication, marketing, public relations, science and scientific writing, oral presentations, higher education in prisons, community-based learning, entrepreneurship.

Part Time Faculty

Jennifer Bernstein
Lecturer: professional communication.

Laura Davis

Lecturer: professional communication for ESL and oral presentations for ESL.

Kevin Dungey
Senior Lecturer: oral presentations.

Shelley Etzine
Lecturer: professional communication for ESL.

Jason Heiserman
Lecturer: oral presentations.

Andrew Kulanko
Senior Lecturer: oral presentations.

Denise Link-Farajali
Lecturer: professional communication, financial math for ESL, research writing for ESL.

Trevor Mackesey
Lecturer: professional communication.

Caroline Wilkins
Lecturer: professional communication.

Professional Development Program

The Professional Development Program (PDP) answers the need to broaden graduate education as expressed in many recent academic articles. For example, The Commission on Pathways Through Graduate School (http://pathwaysreport.org) noted in their final report that more than one-half of all doctoral degree holders in science, engineering or health fields work outside the academy. And while employers believe these graduates bring value, recent graduates lack skills and knowledge in areas like working on teams, entrepreneurship, communication, and project management.

The Professional Development Program is designed to address these needs. The program currently offers a series of some twenty, 7-week courses in topics such as writing business plans, managing people, writing winning proposals and improving presentations. Courses are open to all full time graduate students (masters, PhD and post-doctoral fellows) at Johns Hopkins. A small and growing number of masters degree programs in the Whiting school (only) accept a limited number of these courses as elective credits. Speak with your degree advisor to learn more.

For more information, including a current class schedule and a listing of all modules, visit: engineering.jhu.edu/pdp

Faculty

Program Director
Eric Rice
Senior Lecturer & Director of Graduate Programs: organizational behavior, social entrepreneurship, management, negotiation and conflict management, leadership, public speaking, professional writing.

Full Time Faculty

Bob Graham
Lecturer: entrepreneurship, professional communications, oral presentations.

Illysa Izenberg
Lecturer: engineering management.
Annette Leps
Senior Lecturer & Director of Entrepreneurship & Management Program:
accounting, finance, management.

Charlotte O'Donnell
Lecturer: oral presentations, professional communication, visual rhetoric

Julie Reiser
Senior Lecturer & Director of The Professional Communication Program: technical communication, oral presentations, research writing, dissertation writing, American literature and critical theory.

Pam Sheff
Senior Lecturer & Director of Center for Leadership Education and Master of Science in Engineering Management Program: business and technical communication, marketing, public relations, science and scientific writing, oral presentations, higher education in prisons, community-based learning, entrepreneurship.

William Smedick
Senior Lecturer: leadership theory, leadership in teams.

Part Time Faculty
Sascha Cocron
Lecturer: management, consulting.

Laura Davis
Lecturer: communications, ESL.

Kevin Dungey
Senior Lecturer: communications.

Len Foxwell
Lecturer: communications.

Mark Franceschini
Senior Lecturer: business ethics, internet law.

Guido Galvez
Lecturer: business law.

Herman Goodyear
Lecturer: project management.

Michael Hartwell
Lecturer: improvisation.

Chris Jeffers
Lecturer: business law, patent and IP law.

David Long
Lecturer: management, consulting.

Trevor Mackesey
Lecturer: communications.

Heather Parker
Lecturer: communications.

Joshua Reiter
Senior Lecturer: business process, quality management.

Chemical and Biomolecular Engineering

http://www.jhu.edu/chembe/

Chemical and Biomolecular Engineering (ChemBE) is dedicated to the design and exploitation of chemical, biological, and to the study of phenomena for chemical and biological applications. As a result of the scope and breadth of this rigorous undergraduate program, our students commonly secure employment in industries such as chemical and pharmaceutical production, biomedicine, biotechnology, material design, food, and energy. Graduates may embark on a career to explore new products such as:

- Novel polymers and materials
- Biopharmaceuticals
- Biofuels
- Drugs and Vaccines
- Gene Therapy Products
- Drug Delivery Devices
- Cells and Tissues
- Semiconductors
- Nanodevices
- Food, Beverage, and Health Care Products
- Cells and Tissues
- Gene Therapy Products
- Drug Delivery Devices
- Cells and Tissues
- Semiconductors
- Nanodevices
- Food, Beverage, and Health Care Products

The demands on the modern engineer are high, and graduates must possess a wide range of skills in order to be competitive in a global market. The ChemBE program successfully satisfies these demands. Students take advanced courses in chemistry, physics, mathematics, and biology. Additionally, students are trained in transport, kinetics, and thermodynamics, which are essential to solving real-world engineering problems. Students also hone their professional and communication skills (report writing, oral presentations, and teamwork) in courses involving experimental projects, process design and product design.

Depending on their interests and future career goals, students can choose electives from exciting areas including green engineering, nanotechnology, and bioengineering. These courses, along with undergraduate research opportunities offered by our faculty, are designed to prepare graduates for careers in the chemical industry, biotechnology, pharmaceuticals or microelectronics. The curriculum also offers an outstanding foundation for advanced graduate studies in chemical and biomolecular engineering, biomedical engineering, materials engineering, or for medical, law, or business school.

Students also have the opportunity to develop more in-depth specialty in one or two areas within chemical and biomolecular engineering. Our two tracks are Interfaces and Nanotechnology (IN) and Molecular and Cellular Bioengineering (MCB).

Interfaces and Nanotechnology (IN) Track
Interesting and new physics exist at nanometer length scales, as the surface area of an object begins to approach and exceed its volume. In this focus area, students are trained in the fundamental sciences used to solve problems in nanotechnology and interfacial science. Students take a chemistry course in Materials and Surface Characterization, an advanced physical chemistry laboratory course, and two electives such as Colloids and Nanoparticles, Supramolecular Materials and Nanomedicine and Micro/Nanotechnology.

Molecular and Cellular Bioengineering (MCB) Track
Fields in biotechnology and biomedicine often involve processes at biological, cellular and molecular levels. Common areas utilizing skills in the MCB focus area include the genetic manipulation of cells for protein and vaccine production, and the study and treatment of diseases such as arteriosclerosis and cancer. Students in this focus area must take a

Students also have the opportunity to develop more in-depth specialty in one or two areas within chemical and biomolecular engineering. Our two tracks are Interfaces and Nanotechnology (IN) and Molecular and Cellular Bioengineering (MCB).

Interfaces and Nanotechnology (IN) Track
Interesting and new physics exist at nanometer length scales, as the surface area of an object begins to approach and exceed its volume. In this focus area, students are trained in the fundamental sciences used to solve problems in nanotechnology and interfacial science. Students take a chemistry course in Materials and Surface Characterization, an advanced physical chemistry laboratory course, and two electives such as Colloids and Nanoparticles, Supramolecular Materials and Nanomedicine and Micro/Nanotechnology.

Molecular and Cellular Bioengineering (MCB) Track
Fields in biotechnology and biomedicine often involve processes at biological, cellular and molecular levels. Common areas utilizing skills in the MCB focus area include the genetic manipulation of cells for protein and vaccine production, and the study and treatment of diseases such as arteriosclerosis and cancer. Students in this focus area must take a
laboratory course in Biochemistry, and two electives such as Metabolic Systems Biotechnology, The Design of Biomolecular Systems, and Computational Protein Structure Prediction. In addition, students will take the Biomolecular Engineering Laboratory to learn the hands-on skills required for future careers in biological systems at the molecular and cellular level.

Our mission is to define and educate a new archetype of innovative and fundamentally-grounded engineer at the undergraduate and graduate levels through the fusion of fundamental chemical engineering principles and emerging disciplines. We will nurture our passion for technological innovation, scientific discovery, and leadership in existing and newly created fields that transcend traditional boundaries. We will be known for developing leaders in our increasingly technological society who are unafraid to explore uncharted engineering, scientific, and medical frontiers that will benefit humanity. Recent graduates of the Chemical and Biomolecular Engineering program will attain within a few years of graduation:

- succeed in careers in industrial, academic or government organizations in which they apply their chemical and biomolecular engineering skills to solve diverse long-standing or emerging problems
- excel in their graduate program, medical school or other professional education
- be recognized as future leaders in their chosen field
- perpetuate the JHU legacy of passion for learning, technical excellence, community service and research innovation to foster knowledge creation, lead discovery and impact society.

The department also offers graduate programs leading to the Master of Science and Ph.D. degrees. These programs emphasize research leading to a written thesis.

Undergraduate students strongly involved in research may be interested in our B.S./M.S.E. program in Chemical and Biomolecular Engineering that allows students to obtain a master’s of science in engineering immediately after completion of their bachelors.

**Facilities**
The offices and state-of-the-art laboratories of Chemical and Biomolecular Engineering are located in Maryland Hall on the Homewood campus. The research laboratories are well-equipped for studies in the areas of biochemical engineering, cell and tissue engineering, phase equilibria, membrane science, polymer science, interfacial phenomena, separation processes, fluid mechanics, and nucleation phenomena. The Milton S. Eisenhower Library on the Homewood campus contains over two million volumes and access to more than 325 electronic journals. The university’s other libraries located at the School of Medicine and at the Applied Physics Laboratory are also available to students. Through close collaborations with scientists at the National Institutes of Health, and the National Institute of Standards and Technology, The Institute for Genomic Research, Human Genome Sciences, Inc., and the Food and Drug Administration, students and faculty also have access to a variety of world-class facilities and other resources for research.

**Financial Aid**
Undergraduate scholarships and financial assistance are described on the Student Financial Services (http://finaid.johnshopkins.edu) website. Part-time work is available in the Chemical and Biomolecular Engineering research laboratories on research projects supported by grants and contracts. There also is a federally sponsored work-study program for qualified students.

Financial assistance to graduate students is available in the forms of research assistantships, teaching assistantships, fellowships, and partial or full tuition remission. The financial aid package is specified following acceptance into the graduate program.

**Undergraduate Programs**
Graduates receive a Bachelor of Science degree in Chemical and Biomolecular Engineering accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. As permitted under the ABET guidelines, we are continually updating our undergraduate programs to include the latest advances in chemical and biomolecular engineering. Such modifications will enable us to offer the best possible educational experience to our undergraduates. For the latest chemical engineering educational programs, potential applicants are referred to our website at http://www.jhu.edu/chembe/

**Requirements for the B.S. Degree**
(See also General Requirements for Departmental Majors (p. 7))

The Bachelor of Science degree requires a minimum of 128 credits. Additional details are given in the Chemical and Biomolecular Engineering Undergraduate Advising Manual available from the department or online. The 128 credits must include:

**Chemical and Biomolecular Engineering Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.540.101</td>
<td>Chemical Engineering Today</td>
<td>1</td>
</tr>
<tr>
<td>EN.540.202</td>
<td>Introduction to Chemical &amp; Biological Process Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.540.203</td>
<td>Engineering Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.301</td>
<td>Kinetic Processes</td>
<td>4</td>
</tr>
<tr>
<td>EN.540.303</td>
<td>Transport Phenomena I</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.304</td>
<td>Transport Phenomena II</td>
<td>4</td>
</tr>
<tr>
<td>EN.540.305</td>
<td>Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.306</td>
<td>Chemical &amp; Biomolecular Separation</td>
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<tr>
<td>EN.540.311</td>
<td>Projects in ChemE Unit Operations with Experiments</td>
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<td>or EN.540.313</td>
<td>Projects in ChemBE Unit Operations with Experiments</td>
<td>3</td>
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<tr>
<td>or EN.540.309</td>
<td>Product Design Part 1</td>
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<tr>
<td>or EN.540.310</td>
<td>Product Design Part 2</td>
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<td>EN.540.315</td>
<td>Process Design with Aspen</td>
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<td>EN.540.409</td>
<td>Dynamic Modeling and Control</td>
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<tr>
<td>EN.540.490</td>
<td>Introduction to Chemical Process Safety</td>
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**Engineering Electives**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<td><strong>Physics Courses and Laboratories</strong></td>
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<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
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<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
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<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
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<td>AS.171.102</td>
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<td>or AS.171.108</td>
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**Basic Chemistry Courses and Laboratories**

<table>
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<tbody>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
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</tr>
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</table>
### Advanced Chemistry and Biology Courses **

- AS.020.305 Biochemistry  
- EN.540.307 Cell Biology for Engineers (Optional; students must take this or EN.540.204)  
- AS.020.315 Biochemistry Project lab  
- or AS.030.307 Experiments in Physical Chemistry for Engineers  
- or AS.250.253 Protein Engineering and Biochemistry Lab  
- EN.540.204 Applied Physical Chemistry  
- or EN.540.307 Cell Biology for Engineers

### Mathematics Requirement ***

- AS.110.108 Calculus I  
- AS.110.109 Calculus II (For Physical Sciences and Engineering)  
- AS.110.202 Calculus III  
- or AS.110.211 Honors Multivariable Calculus  
- AS.110.302 Differential Equations and Applications  
- AS.110.302 Differential Equations and Applications  
- AS.110.302 Differential Equations and Applications

### Humanities and Social Sciences/ Writing Requirements

- EN.661.315 Culture of the Engineering Profession  
- Humanities and Social Sciences Courses. Eighteen credits designated as Humanities or Social and Behavioral Sciences are required. At least one of these courses must be an advanced course at the 300-level or higher in addition to Culture of Engineering. See the Chemical and Biomolecular Engineering Undergraduate Advising Manual for more details.  
- Writing Courses. Two writing-intensive courses are required. One of the courses must be EN.661.315 Culture of the Engineering Profession. The courses that are taken to satisfy the university writing requirement must be passed with a grade of C- or better.  
- The departmental computing requirement is satisfied by EN.540.305 Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers. This course can be substituted with a statistics course paired with a programming course such as EN.500.112 Gateway Computing.  
- Undesignated Electives. A minimum of 128 credits is required for the degree. Therefore, in addition to all the credits taken to fulfill the requirements mentioned in the various sections above (e.g., chemical engineering core courses, engineering electives, basic science, advanced chemistry electives, mathematics requirement, and Humanities and Social and Behavioral Sciences courses) additional credits (called undesignated credits) are required.

* Students also must have a grade point average of at least 2.00 in the chemical and biomolecular engineering core courses to graduate. The core courses for GPA calculation comprise all of the above courses except for EN.540.101 Chemical Engineering Today and EN.540.490 Introduction to Chemical Process Safety.  
** Students need additional courses beyond these courses. Requirements include additional courses in Chemistry and Biology. Students who are pursuing tracks in Molecular and Cellular Bioengineering or Interfaces and Nanotechnology have additional and/or alternate requirements.  
*** Calculus is so essential to Chemical Engineering that a grade of C- or better in both Calculus I and Calculus II is required.

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### Sample Program for Chemical and Biomolecular Engineering Degree

#### Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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<td>AS.030.105 Introductory Chemistry Laboratory I</td>
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<tr>
<td>AS.110.108 Calculus I</td>
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<td>AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
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<tr>
<td>AS.171.101 General Physics: Physical Science Major I</td>
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<td>AS.171.102 General Physics: Physical Science Major II</td>
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<tr>
<td>AS.173.111 General Physics Laboratory I</td>
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<td>Humanities/Social and Behavioral Sciences Elective</td>
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<tr>
<td>HumanitieS/Social and Behavioral Sciences Elective</td>
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<td></td>
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</tr>
<tr>
<td>EN.540.301 Kinetic Processes</td>
<td>4</td>
<td>EN.540.302 Differential Equations and Applications</td>
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<td>AS.030.205 Introductory Organic Chemistry I</td>
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<td>EN.540.307 Cell Biology for Engineers</td>
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<td>Undesignated Elective</td>
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#### Sophomore

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<tbody>
<tr>
<td>EN.540.202 Introduction to Chemical Biological Process Analysis</td>
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<td>EN.540.203 Engineering Thermodynamics</td>
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<tr>
<td>AS.110.202 Calculus III</td>
<td>4</td>
<td>EN.540.303 Transport Phenomena I</td>
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<tr>
<td>AS.020.305 Biochemistry</td>
<td>4</td>
<td>AS.110.302 Differential Equations and Applications</td>
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<td>AS.030.205 Introduction to Chemical Biological Process Analysis</td>
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#### Junior

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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.540.304 Transport Phenomena II</td>
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<td>EN.540.301 Kinetic Processes</td>
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<tr>
<td>AS.030.305, Physical AS Biology Chemistry Instrumentation Laboratory I</td>
<td>1-3</td>
<td>EN.540.306 Chemical Biomolecular Separation</td>
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</table>
EN.540.305 Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers 3  
EN.661.315 Culture of the Engineering Profession 3  

Humanities/Social and Behavioral Sciences Elective 3 
Engineering Elective 3 
EN.540.490 Introduction to Chemical Process Safety 1 

**Senior**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tr>
<td>EN.540.311 Projects in ChemE Unit Operations with Experiments</td>
<td>6</td>
<td>EN.540.314 ChemBE Product Design</td>
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<tr>
<td>EN.540.409 Dynamic Modeling and Control</td>
<td>4</td>
<td>EN.540.315 Process Design with Aspen</td>
<td>2</td>
</tr>
<tr>
<td>Humanities/Social and Behavioral Sciences Elective</td>
<td>3</td>
<td>Engineering Elective</td>
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<tr>
<td>Engineering Elective</td>
<td>3</td>
<td>Humanities/Social and Behavioral Sciences Elective</td>
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</table>

Total Credits: 127-129

**Tracks**

Students pursuing a degree in Chemical and Biomolecular Engineering have the option of concentrating on specific fields including Interfaces and Nanotechnology and Molecular and Cellular Bioengineering. Students completing a track will have this fact designated on their official university checklist. These focus areas have additional and/or alternate requirements, as described.

**Molecular and Cellular Bioengineering (MCB) Track**

Students must fulfill the following requirements:

- Students take either AS.020.306 Cell Biology or EN.540.307 Cell Biology for Engineers.
- The Advanced Chemistry and Biology laboratory requirement is fulfilled with AS.020.315 Biochemistry Project lab or AS.250.253 Protein Engineering and Biochemistry Lab.
- Six credits of bioengineering electives are required. See department for a list of approved electives.
- Students take EN.540.313 Projects in ChemBE Unit Operations with Experiments instead of EN.540.311 Projects in ChemE Unit Operations with Experiments.

**Sample Program: Molecular and Cellular Bioengineering Track**

**Freshman**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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<td>AS.030.102 Introductory Chemistry II</td>
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<th>Spring</th>
<th>Credits</th>
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<tr>
<td>AS.030.105 Introductory Chemistry Laboratory I</td>
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<td>AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
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<td>AS.171.101 General Physics:Physical Science Major I</td>
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<td>AS.171.102 General Physics: Physical Science Major II</td>
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<td>AS.173.111 General Physics Laboratory I</td>
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<td>Humanities/Social and Behavioral Sciences Elective</td>
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<tr>
<td>EN.540.101 Chemical Engineering Today</td>
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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EN.540.202 Introduction to Chemical Biological Process Analysis</td>
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<td>EN.540.203 Engineering Thermodynamics</td>
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<td>AS.110.202 Calculus III</td>
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<td>EN.540.303 Transport Phenomena I</td>
<td>3</td>
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<tr>
<td>AS.020.305 Biochemistry</td>
<td>4</td>
<td>AS.110.302 Differential Equations and Applications (H/S Elective)</td>
<td>4</td>
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<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AS.030.205 Introductory Organic Chemistry I</td>
<td>4</td>
<td>EN.540.307 Cell Biology for Engineers</td>
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<table>
<thead>
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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>EN.540.304 Transport Phenomena II</td>
<td>4</td>
<td>EN.540.301 Kinetic Processes</td>
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<td>AS.020.315 or AS Biophysics 253</td>
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<td>EN.540.306 Chemical Biomolecular Separation</td>
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<td>EN.540.305 Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers</td>
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<td>EN.661.315 Culture of the Engineering Profession</td>
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<td>Humanities/Social and Behavioral Sciences Elective</td>
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<td>Undesignated Elective</td>
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<tr>
<td>Engineering Elective</td>
<td>3</td>
<td>Advanced Chem/Bio Elective</td>
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</table>
## Interfaces and Nanotechnology (IN) Focus Area

Students must fulfill the following requirements:

- Students take EN.540.204 Applied Physical Chemistry.
- The Advanced Chemistry and Biology laboratory requirement is fulfilled with AS.030.305 Physical Chemistry Instrumentation Laboratory I.
- AS.030.452 Materials & Surface is required and satisfied three credits of the advanced chemistry electives.
- Six credits of interfaces and nanotechnology electives are required. See department for a list of approved electives.

### Sample Program: Interfaces and Nanotechnology Track

#### Freshman

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>3</td>
<td>AS.030.101 Introductory Chemistry I</td>
<td>3 AS.030.102 Introductory Chemistry II</td>
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<td>1</td>
<td>AS.030.105 Introductory Chemistry Laboratory I</td>
<td>1 AS.030.106 Introductory Chemistry Laboratory II</td>
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<tr>
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<td>AS.110.108 Calculus I</td>
<td>4 AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
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<tr>
<td>4</td>
<td>AS.171.101 General Physics: Physical Science Major I</td>
<td>4 AS.171.102 General Physics: Physical Science Major II</td>
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<tr>
<td>3</td>
<td>AS.173.111 General Physics Laboratory I</td>
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<tr>
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<td>EN.540.101 Chemical Engineering Today</td>
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<td>Humanities/Social and Behavioral Sciences Elective</td>
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Total Credits: 128-130

#### Sophomore

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<th>Credits</th>
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<tbody>
<tr>
<td>6</td>
<td>EN.540.313 Projects in ChemBE Unit Operations with Experiments</td>
<td>2 EN.540.314 ChemBE Product Design</td>
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<tr>
<td>4</td>
<td>EN.540.409 Dynamic Modeling and Control</td>
<td>2 EN.540.315 Process Design with Aspen</td>
<td>2</td>
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<tr>
<td>3</td>
<td>AS.110.202 Calculus III</td>
<td>3 AS.110.302 Differential Equations and Applications (H/S Elective)</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>AS.020.305 Biochemistry</td>
<td>4 AS.110.302 Differential Equations and Applications (H/S Elective)</td>
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<tr>
<td>4</td>
<td>AS.030.205 Introductory Organic Chemistry I</td>
<td>4 Humanies/Social and Behavioral Sciences Elective</td>
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<td>7</td>
<td>Humanities/Social and Behavioral Sciences Elective</td>
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#### Junior

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<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>4</td>
<td>EN.540.202 Introduction to Chemical Biological Process Analysis</td>
<td>4 EN.540.203 Engineering Thermodynamics</td>
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<tr>
<td>3</td>
<td>AS.110.202 Calculus III</td>
<td>4 AS.110.203 Engineering Thermodynamics</td>
<td>4</td>
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<tr>
<td>3</td>
<td>AS.020.305 Biochemistry</td>
<td>4 AS.110.302 Differential Equations and Applications (H/S Elective)</td>
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</tr>
<tr>
<td>3</td>
<td>AS.030.205 Introductory Organic Chemistry I</td>
<td>4 Humanies/Social and Behavioral Sciences Elective</td>
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<tr>
<td>3</td>
<td>Humanities/Social and Behavioral Sciences Elective</td>
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#### Senior

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<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>6</td>
<td>EN.540.311 Projects in ChemBE Unit Operations with Experiments</td>
<td>2 EN.540.314 ChemBE Product Design</td>
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<tr>
<td>4</td>
<td>EN.540.409 Dynamic Modeling and Control</td>
<td>2 EN.540.315 Process Design with Aspen</td>
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<tr>
<td>3</td>
<td>AS.030.452 Materials Surface Elective</td>
<td>3 Interfaces/Nanotechnology Elective</td>
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<td>3</td>
<td>Interfaces/Nanotechnology Elective</td>
<td>3 Undesignated Electives</td>
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</table>
B.S./M.S.E. Program in Chemical and Biomolecular Engineering

The B.S./M.S.E. program in Chemical and Biomolecular Engineering allows students to obtain a master of science in engineering immediately after the bachelor of science degree by adding at least a year of study. For students who qualify academically, the Whiting School of Engineering allows a 50 percent waiver after the completion of eight semesters or having received the Bachelor of Science degree.

Graduate Programs

Master of Science in Engineering

Students have two options in pursuing an M.S.E. in Chemical and Biomolecular Engineering: (a) a coursework-only MSE, or (b) an essay-based MSE (which entails obtaining approval to work under the guidance of a ChemBE faculty advisor to create and document original research to be submitted in an essay).

1. Essay-Based Master of Science in Engineering Checklist
   - The student must complete six graduate level, i.e. 600 and above, courses approved by the student’s research advisor and the Director of the Master's Program. The student and research advisor select these courses to design a curriculum appropriate for the student’s research interest and educational goals.
   - These six courses cannot include seminars, independent study, graduate research or special studies. They should be at least 3 credit hours per course. Students are allowed to substitute any combination of 1-2 credit hour courses (not to include seminars, independent study, graduate research, or special studies) for one of their 3 credit hour courses with advisor approval.
   - At least four of the six courses must be in the Chemical and Biomolecular Engineering Department (540.xxx or 545.xxx). Exceptions to this rule must be approved by the Director of the Master’s Program. A course from a department other than ChemBE may be allowed to count as one of the four courses only if the course has significant Chemical and Biomolecular Engineering content, is 3 credit hours (or the student intends to use their one allowable substitution on a set of courses that add to three credit hours), and is consistent with the student’s research interests or educational goals.
   - Of the four ChemBE courses, 3 must be the MSE core courses:
     - Thermodynamics in Practice (Offered in the Fall)
     - Kinetics and Reactor Design (Offered in the Spring)
     - Transport and Numerical Tools (Offered in the Spring)
   - Students are allowed to count 400-level courses towards their MSE degree if the course is not offered at the 600-level. Courses offered at both the 400- and 600-level must be taken at the 600-level to fulfill MSE course requirements. All ChemBE coursework must be taken at the 600-level.
   - The student must also enroll in at least one semester of graduate seminars (540.600/601) throughout his or her tenure.
   - Students must have a B average in coursework to complete this degree.
   - No D grade in ChemBE courses can be counted toward the requirements. In a given semester the receipt of a single D, F, or 2 C grades result in probation. Once in probation an additional C grade or below will result in termination from the program. A student will remain on academic probation until the courses with the D or F grades have been re-taken for a higher grade or (if no D or F grades were present) the student attains a B average in their coursework.
   - Students must remain in good research standing with their research advisor. Failure to do so will result in probation and transfer to the coursework MSE program.
   - The student must write an essay based on original research and literature review and present his or her results at an open seminar attended by the faculty and students. The essay must be approved by the departmental graduate committee, which consists of the graduate research advisor and at least one more faculty member from the Department of Chemical and Biomolecular Engineering.
   - In a semester where the student is solely pursuing research, the student must maintain full-time registration.
   - Completion of Responsible Conduct of Research training. For complete information, see eng.jhu.edu/wse/page/conduct-of-research-training
   - Completion of Academic Ethics (EN.500.603)
   - Please obtain verification and approval to take courses before registering.

2. Coursework-Only Master of Science in Engineering Checklist
   - The student must complete ten graduate level, i.e. 600 and above, courses approved by the Director of the Master’s program. These courses must be worth 3 credit hours per course. The student and the academic advisor select these courses to design a curriculum appropriate for the student’s interest and educational goals.
   - These ten courses cannot include seminars, independent study, graduate research or special studies.
   - At least six of the ten courses must be in the Chemical and Biomolecular Engineering Department (540.6xx and 545.6xx). Exceptions to this rule must be approved by the Director of the Master’s Program. A course from a department other than ChemBE may be allowed to count as one of the six courses only if the course has significant Chemical and Biomolecular Engineering content and is consistent with the student’s educational goals and is 3 credit hours. Students are allowed to substitute any combination of 1-2 credit hour courses (not to include seminars, independent study, graduate research, or special studies) for one of their 3 credit hour courses.
   - Of the six ChemBE courses, 3 must be the core courses:
• Thermodynamics in Practice (Offered in the Fall)
• Kinetics and Reactor Design (Offered in the Spring)
• Transport and Numerical Tools (Offered in the Spring)

• Students are allowed to count 400-level courses towards their MSE degree if the course is not offered at the 600-level. Courses offered at both the 400- and 600-level must be taken at the 600-level to fulfill MSE course requirements. All ChemBE coursework must be taken at the 600-level.

• The student must also enroll in at least one semester of graduate seminars (540.600/601) throughout his or her tenure in the Department of Chemical and Biomolecular Engineering at Johns Hopkins University.

• Students must have a B average in coursework to complete this degree.

• No D grade in ChemBE courses can be counted toward the requirements. In a given semester the receipt of a single D, F, or 2 C grades result in probation. Once in probation an additional C grade or below will result in termination from the program. A student will remain on academic probation until the courses with the D or F grades have been re-taken for a higher grade or (if no D or F grades were present) the student attains a B average in their coursework.

• Completion of Academic Ethics (EN.500.603)

Additional information and requirements can be found in the department Graduate Handbook.

Doctor of Philosophy

The Ph.D. degree is awarded for original research performed under the guidance of a thesis advisor. The formal requirements for this degree are:

1. Completion of six graduate-level courses including the four required core courses.
2. Completion of an annual research evaluation each year.
3. Serve as a teaching assistant for at least two required courses.
4. Completion in the first semester of departmental safety requirements (see Handbook for more information).
5. Attend graduate seminars (540.600/601) every semester. Students are expected to enroll and attend department seminars throughout their tenure in the department.
7. Completion of an original research project, documented in a dissertation that is defended by the candidate in a public presentation.
8. Completion of Responsible Conduct of Research training. For complete information, see eng.jhu.edu/wse/page/conduct-of-research-training
9. Completion of Academic Ethics (EN.500.603)
10. Application for Graduation submitted to Registrar's office.


Ph.D. Course Work

Students must successfully complete six graduate-level courses including the four required core courses listed below:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.540.630</td>
<td>Thermodynamics, Statistical Mechanics, and Kinetics</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.652</td>
<td>Advanced Transport Phenomena</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.602</td>
<td>Metabolic Systems Biotechnology</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.615</td>
<td>Interfacial Science with Applications to Nanoscale Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Ph.D. Students are strongly encouraged to take the four required courses in the first fall semester. However, students who do not have an undergraduate degree in Chemical Engineering or a closely related field may need additional course and should discuss an appropriate course plan with the Director of the Graduate Program at the start of their first semester.

The remaining two engineering or science courses are chosen with the help of the student’s advisor to design a curriculum appropriate for the student’s research interest. These two courses cannot include seminars, independent study, graduate research or special studies.

Each of the six courses must be passed with a letter grade of B- or higher. In addition, the student must maintain an overall grade point average (GPA) of 3.0 or better. If the student’s GPA falls below 3.0, the student must re-take one or more of the courses and earn a higher grade. All grades remain on graduate students transcripts. If a student receives a grade of C+ or lower in a required core course, the student will be allowed to re-take the course once to achieve a grade of B- or higher. Failure to receive a B- or better the second time will be cause for dismissal from the program. Receipt of grades of C+ or lower in two or more required courses will ordinarily be cause for dismissal from the program without the opportunity to re-take those courses.

Ph.D. Thesis Criteria and Graduate Board Oral Exam

Candidates must write a dissertation conforming to university requirements that describes the students work and results in detail. A public defense of the dissertation is required, and will be followed by a closed examination session. Because the closed examination session fulfills the university Graduate Board Oral (GBO) examination requirement, all procedures pertaining to GBOs as established by the University Graduate Board must be followed.

Additional information can be found in the department Graduate Handbook.

For current faculty and contact information go to http://www.jhu.edu/chembe/faculty-staff/

Faculty

Chair
Paulette Clancy
Head

Professors
Michael J. Betenbaugh
Professor: genomics, recombinant DNA biotechnology, biopharmaceuticals, metabolic engineering, insect and mammalian cell culture, glycosylation engineering, and cell death processes.

Michael A. Bevan
Professor and Director of Graduate Studies: colloidal interactions, dynamics, assembly, nanoparticle materials and devices, biomacromolecular interactions

Marc D. Donohue
Professor: phase equilibria, statistical thermodynamics, kinetics of diffusion and phase transitions, adsorption.

Sharon Gerecht
Professor: embryonic and adult stem cells, vascular regeneration, micro/nano fabrication, biomaterials, tissue engineering

David H. Gracias
Professor: phase equilibria, statistical thermodynamics, kinetics of diffusion and phase transitions, adsorption.

Michael Tsapatis
Bloomberg Distinguished Professor: zeolite synthesis, separations, catalysis

Denis Wirtz
Professor and Vice Provost for Research: cell adhesion and migration, cell mechanics, cytoskeleton, receptor-ligand interactions, cancer, particle tracking, new proteomics tools.

Associate Professors
Stavroula Sofou
Associate Professor: heterogeneous lipid bilayers, drug delivery/nanobiomaterials, targeted chemotherapy, alpha-particle therapy.

Honggang Cui
Associate Professor: nanoscience and nanotechnology, biomolecular engineering, peptide synthesis and assembly, drug delivery, supramolecular polymers, nanoparticle imaging, diagnosis, and cancer therapeutics.

Joelle Frechette
Associate Professor and Director of Master’s Studies: properties of surfaces, thin films; fluid interfaces and confined fluids; measurements of surface forces and adhesion; micro and nanotechnology; microfluidics; nanoparticles.

Rebecca Schulman
Associate Professor: nanotechnology, self-assembly, theory and experiment, nucleation, biomanufacturing, DNA, nanoelectronics, biomolecular engineering, single-molecular analysis.

Assistant Professors
Jamie Spangler
Assistant Professor: structural and molecular immunology, protein engineering, therapeutic antibody discovery and design, targeted drug development.

Chao Wang
Assistant Professor: heterogenous catalysis, renewable energy technologies e.g., photoelectrochemical solar cells and lithium batteries, and green chemical engineering.

Senior Lecturer
Lise Dahuron
Senior Lecturer and Director of Undergraduate Studies: separations, distillation, membrane technology, new product development, process design.

Carmo Pereira
Senior Lecturer: catalysis and reaction engineering in chemical engineering practice.

Lecturer
Sakul Ratanalert
Lecturer: Engineering Education, Unit Operations, Process Design, Thermodynamics, DNA Nanotechnology

Professor Emeritus
Joseph L. Katz
Professor Emeritus: nucleation processes (e.g., condensation of supersaturated vapors, boiling of superheated liquids and its applications, e.g., the Ouzo effect, parts per quadrillion detection) formation of nanosized ceramic oxide powders in flames, new proteomics tools.

Research Professor
Gregory Aranovich
Research Professor: molecular thermodynamics, phase equilibria, adsorption phenomena, separation processes, and diffusion.

Assistant Research Professor
Daniele Gilkes

Eva Lai
Assistant Research Professor: biomedical sciences, biomonitoring technologies, regenerative medicine, tissue engineering.

Joint, Part-Time and Visiting Appointments
Steven An
Associate Professor, Johns Hopkins University Bloomberg School of Public Health

Patrick Breysse
Professor, Johns Hopkins University School of Medicine, Division of Environmental Health Engineering

Jennifer Elisseeff
Professor, Johns Hopkins University School of Medicine, Department of Ophthalmology
Director of the Translational Tissue Engineering Center
Jonah Erlebacher
Professor & Chair, Johns Hopkins University Whiting School of Engineering, Materials Science and Engineering
Justin Hanes
Lewis J. Ort Professor of Ophthalmology, Johns Hopkins University School of Medicine, Ophthalmology
John Isaacs
Professor, Johns Hopkins University, School of Medicine
Kenneth Pienta
Professor, Johns Hopkins University School of Medicine, Urology
Research
Martin Pomper
Professor, Johns Hopkins University School of Medicine, Radiology
Kai Qi
Adjunct Assistant Professor
Kannan Rangaramanujam
Professor, Johns Hopkins University School of Medicine, Ophthalmology
Doug Robinson
Professor, Johns Hopkins University School of Medicine, Cell Biology
Peter Searson
Professor, Johns Hopkins University Whiting School of Engineering, Materials Science and Engineering
Joy Yang
Visiting Associate Professor
Jin Zhang
Professor, Johns Hopkins University School of Medicine, Pharmacology
For current course information and registration go to https://sis.jhu.edu/courses/

Courses

EN.540.101. Chemical Engineering Today. 1.0 Credit.
A series of weekly lectures to introduce students to chemical and biomolecular engineering and its role as a profession in addressing contemporary technological, social, ethical, and economic issues in today’s world. The lectures will include examples of how chemical and biomolecular engineers apply the principles of physics and chemistry to develop new products, improve process efficiencies, and alleviate the strain on the ecosystem through the design of novel environmentally conscious processes. In addition, the lectures will highlight exciting new areas now being advanced by chemical and biomolecular engineers, such as biochemical engineering, tissue engineering, nanoparticle fabrication, and processing smart polymers for applications in computer technology and as sensors. Freshmen Only.
Instructor(s): X. Wan
Area: Engineering.

EN.540.111. Matlab Made Easy. 1.0 Credit.
Computer programming is as crucial a tool for modern engineering as calculus. Engineers use computers for almost everything: from design and manufacturing in industry to data collection and analysis in research. In this course, students will use a piece of popular engineering software, Matlab, to learn the fundamentals of programming. We will start simple, exploring such questions as: What is a program? How can we use loops and branches to accomplish a task? What exactly is Matlab doing when it’s running a script? Finally, we will build upon the fundamentals of programming to tackle relevant engineering problems. This course will help ChemBE students excel in subsequent engineering courses, such as Modeling and Statistics for ChemBEs, Separations, and Chemical Kinetics, by giving students’ knowledge of the tool that helps solve complex engineering problems.
Instructor(s): E. Volkova; H. Zierden; S. Schaffter
Area: Engineering.

EN.540.202. Introduction to Chemical & Biological Process Analysis. 4.0 Credits.
Introduction to chemical and biomolecular engineering and the fundamental principles of chemical process analysis. Formulation and solution of material and energy balances on chemical processes. Reductionist approaches to the solution of complex, multi-unit processes will be emphasized. Introduction to the basic concepts of thermodynamics as well as chemical and biochemical reactions.
Prerequisites: (AS.030.101 OR AS.030.103) AND (AS.171.101 OR AS.171.107) AND (AS.030.102 OR AS.030.103 OR AS.110.109 OR AS.171.102)
Instructor(s): J. Gray
Area: Engineering.

EN.540.203. Engineering Thermodynamics. 3.0 Credits.
Formulation and solution of material, energy, and entropy balances with an emphasis on open systems. A systematic problem-solving approach is developed for chemical and biomolecular process-related systems. Extensive use is made of classical thermodynamic relationships and constitutive equations for one and two component systems. Applications include the analysis and design of engines, refrigerators, heat pumps, compressors, and turbines.
Prerequisites: EN.540.202;AS.110.202
Instructor(s): J. Frechette; M. Bevan
Area: Engineering.

EN.540.204. Applied Physical Chemistry. 3.0 Credits.
The topics in this course include thermodynamic models for multicomponent phase equilibrium including vapor liquid equilibrium, phase diagrams, activity models and colligative properties in both non-electrolyte and electrolyte solutions. A link between average thermodynamic properties and microstates and molecular interactions is made via a discussion of intermolecular forces and the partition function. Also covered are thermodynamic relationships to describe chemical equilibria, and basic concepts in quantum mechanics and statistical mechanics.
Prerequisites: EN.540.203 AND EN.540.305
Instructor(s): D. Gracias
Area: Engineering.
EN.540.290. Chemical Engineering Modeling and Design for Sophomores. 3.0 Credits.
The courses EN.540.290, 291, 390, and 391 guide the students through the open-ended problems in product and process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the creation of new products to fulfill a societal need. Process design concerns the quantitative description of processes which serve to produce chemically-derived materials and the estimation of process profitability. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the principles of unit operations and design. Students report weekly both orally and in writing on their accomplishments. Some projects are single semester, but others can be multi-semester. Students can start in any semester and can work on projects for as many semesters as they want.
Instructor(s): M. Donohue
Area: Engineering.

EN.540.291. Chemical Engineering Modeling and Design for Sophomores. 3.0 Credits.
The courses 540.290, 291, 390, and 391 guide the students through the open-ended problems in product and process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the creation of new products to fulfill a societal need. Process design concerns the quantitative description of processes which serve to produce chemically-derived materials and the estimation of process profitability. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the principles of unit operations and design. Students report weekly both orally and in writing on their accomplishments. Some projects are single semester, but others can be multi-semester. Students can start in any semester and can work on projects for as many semesters as they want.
Instructor(s): M. Donohue
Area: Engineering.

EN.540.301. Kinetic Processes. 4.0 Credits.
Review of numerical methods applied to kinetic phenomena and reactor design in chemical and biological processes. Homogeneous kinetics and interpretation of reaction rate data. Batch, plug flow, and stirred tank reactor analyses, including reactors in parallel and in series. Selectivity and optimization considerations in multiple reaction systems. Non isothermal reactors. Elements of heterogeneous kinetics, including adsorption isotherms and heterogeneous catalysis. Coupled transport and chemical/biological reaction rates.
Prerequisites: EN.540.203 AND EN.540.303; EN.540.305 or programming course
Instructor(s): H. Cui
Area: Engineering.

EN.540.303. Transport Phenomena I. 3.0 Credits.
Molecular mechanisms of momentum transport (viscous flow), energy transport (heat conduction), and mass transport (diffusion). Isothermal equations of change (continuity, motion, and energy). The development of the Navier Stokes equation. The development of non isothermal and multi component equations of change for heat and mass transfer. Exact solutions to steady state, isothermal unidirectional flow problems, to steady state heat and mass transfer problems. The analogies between heat, mass, and momentum transfer are emphasized throughout the course.
Prerequisites: AS.110.302
Instructor(s): J. Frechette
Area: Engineering.

EN.540.304. Transport Phenomena II. 4.0 Credits.
Prerequisites: EN.540.303.
Instructor(s): Z. Gagnon
Area: Engineering.

EN.540.305. Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers. 3.0 Credits.
This course seeks to build the student's strength in Chemical Engineering computing and data analysis. To this end, in the first part of the course, we will become familiar with the Matlab/Octave computing environment and solve problems in Chemical Engineering that involve concepts from Process Analysis, Thermodynamics, Transport Phenomena, and Kinetics. In the subsequent part, we will build on the skills learnt earlier and tackle problems in Data Analysis and Hypothesis testing.
Prerequisites: EN.540.202 AND AS.110.302
Instructor(s): R. Schulman
Area: Engineering.

EN.540.306. Chemical & Biomolecular Separation. 3.0 Credits.
This course covers staged and continuous-contacting separations processes critical to the chemical and biochemical industries. Separations technologies studied include distillation, liquid-liquid extraction, gas absorption, membrane ultrafiltration, reverse osmosis, dialysis, adsorption, and chromatography. Particular emphasis is placed on the biochemical uses of these processes and consequently on how the treatment of these processes differs from the more traditional approach.
Prerequisites: EN.540.203 AND EN.540.305 or programming course
Instructor(s): M. Betenbaugh
Area: Engineering.

EN.540.307. Cell Biology for Engineers. 3.0 Credits.
This course explores fundamental structural details and molecular functions of different parts of the cell. Considerable emphasis is placed on experimental/quantitative approaches to answering these questions. Topics include Central dogma and the nucleus; protein trafficking; ion transporters; cytoskeleton; molecular motors; cell cycle and cell division; signal transduction, cell growth and cancer; cell death, the extracellular matrix; cell adhesion, cell junctions and epithelium; and muscle contraction, cell motility and morphogenesis.
Prerequisites: Cell Biology restriction: students who have completed AS.020.306 may not enroll.
Instructor(s): J. Yang; R. Li
Area: Natural Sciences.
EN.540.309. Product Design Part 1. 2.0 Credits.
This course guides the student through the steps of product design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the selection of best products to fulfill the needs. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the primary objectives of the course. Students report several times both orally and in writing on their accomplishments. This course is the first part of a two-semester sequence that optionally can be taken instead of EN.540.314 Chemical and Biomolecular Engineering Product Design. The material covered is the same as in EN.540.314, but more time is allowed so that laboratory tests can be performed and/or prototypes can be made. Note that students must take 540.310 to complete this sequence and before registering for this class.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.; EN.540.303 AND EN.540.490; EN.540.306 AND EN.540.301
Instructor(s): M. Donohue
Area: Engineering.

EN.540.310. Product Design Part 2. 2.0 Credits.
This course is one part of a two semester sequence that optionally can be taken instead of for This course is the second part of a two semester sequence (with EN.540.309) that optionally can be taken instead of EN.540.314 Chemical and Biomolecular Engineering Product Design. Students continue to work with their team on their product design project. Students report several times both orally and in writing on their accomplishments. The material covered is the same as in EN.540.314, but more time is allowed so that laboratory tests can be performed and/or prototypes can be made. Note that both courses, EN.540.309 and EN.540.310 must be taken to satisfy the Undergraduate degree requirement of the Chemical and Biomolecular Engineering program. The two courses can be started in any term.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.; EN.540.309
Instructor(s): M. Donohue
Area: Engineering.

EN.540.311. Projects in ChemE Unit Operations with Experiments. 6.0 Credits.
This course challenges students with laboratory projects that are not well-defined. Students work in groups to develop an effective approach to experiments. They identify the important operating variables, decide how best to obtain them using measured or calculated values. Based on their results they predict, carryout, analyze and improve experiments. Each student analyzes at least two of the following biomolecular projects: bioreactor, biocatalysis and membrane separation and one of the projects in EN.540.311. In addition to technical objectives, this course stresses oral and written communication. Students will have additional meeting times with the instructors and some writing professors outside of class.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.; EN.540.301 AND EN.540.304 AND EN.540.306 AND EN.540.490 AND EN.661.315
Instructor(s): A. Goffin; L. Dahuron; M. Ostermeier; S. Gerecht
Area: Engineering
Writing Intensive.

EN.540.312. Projects in ChemBE Unit Operations with Experiments Part 2. 3.0 Credits.
Students who, as a part of an exchange program, participated in a laboratory course at the Technical University of Denmark at Copenhagen during the summer are required to register for this course to complete their equivalency requirement for the Chemical and Biomolecular Engineering Laboratory course offered in fall at JHU. The final grade for this course will incorporate the DTU grade. In addition, students perform one experimental project and submit a full professional report along with the current Senior Lab students. Students make a 15-min presentation to the junior class about their projects and of their experience in Denmark.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.; EN.540.301 AND EN.540.304 AND EN.540.306 AND EN.540.490 AND EN.661.315
Instructor(s): C. Pereira; L. Dahuron
Area: Engineering
Writing Intensive.

EN.540.313. Projects in ChemBE Unit Operations with Experiments. 6.0 Credits.
This course challenges students with laboratory projects that are not well-defined. Students work in groups to develop an effective approach to experiments. They identify the important operating variables, decide how best to obtain them using measured or calculated values. Based on their results they predict, carryout, analyze and improve experiments. Each student analyzes at least two of the following biomolecular projects: bioreactor, biocatalysis and membrane separation and one of the projects in EN.540.311. In addition to technical objectives, this course stresses oral and written communication. Students will have additional meeting times with the instructors and some writing professors outside of class.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.; EN.540.301 AND EN.540.304 AND EN.540.306 AND EN.540.490 AND EN.661.315
Instructor(s): A. Goffin; L. Dahuron; M. Ostermeier; S. Gerecht
Area: Engineering
Writing Intensive.

EN.540.314. ChemBE Product Design. 2.0 Credits.
This course guides the student through the contrasting aspects of product design and of process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the selection of best products to fulfill the needs. Process design concerns the quantitative description of processes, which serve to produce many commodity chemicals, the estimation of process profitability, and the potential for profitability improvement through incremental changes in the process. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the primary objectives of the course. Students report several times both orally and in writing on their accomplishments.
Prerequisites: EN.540.303; EN.540.306 AND EN.540.301
Instructor(s): A. Goffin; C. Pereira; T. Fekete
Area: Engineering.

EN.540.315. Process Design with Aspen. 2.0 Credits.
Prerequisites: EN.540.303; EN.540.306 AND EN.540.301
Instructor(s): A. Goffin; L. Dahuron
Area: Engineering.
EN.540.390. Chemical Engineering Modeling and Design for Juniors. 3.0 Credits.
The courses EN.540.290, 291, 390, and 391 guide the students through the open-ended problems in product and process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the creation of new products to fulfill a societal need. Process design concerns the quantitative description of processes which serve to produce chemically-derived materials and the estimation of process profitability. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the principles of unit operations and design. Students report weekly both orally and in writing on their accomplishments. Some projects are single semester, but others can be multi-semester. Students can start in any semester and can work on projects for as many semesters as they want.
Instructor(s): M. Donohue
Area: Engineering.

EN.540.391. Chemical Engineering Modeling and Design for Juniors. 3.0 Credits.
The courses 540.290, 291, 390, and 391 guide the students through the open-ended problems in product and process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the creation of new products to fulfill a societal need. Process design concerns the quantitative description of processes which serve to produce chemically-derived materials and the estimation of process profitability. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the principles of unit operations and design. Students report weekly both orally and in writing on their accomplishments. Some projects are single semester, but others can be multi-semester. Students can start in any semester and can work on projects for as many semesters as they want.
Instructor(s): M. Donohue
Area: Engineering.

EN.540.400. Project in Design: Pharmacokinetics. 3.0 Credits.
This is a design course in which the design projects will be to develop pharmacokinetic models of the human body that can be used to understand the temporal distribution, spatial distribution and bioavailability of pharmaceutical drugs. The course (and software to be developed) will cover the spectrum of factors affecting pharmaceutical bioavailability including drug formulation, mode of dosing and dosing rate, metabolism and metabolic cascades, storage in fatty tissues, and diffusional limitations (such as in crossing the blood-brain barrier or diffusional differences between normal and cancerous cells). The goal is to develop process models of the human body that will predict pharmaceutical bioavailability as a function of time and organ (or cell) type that will work for a wide variety of pharmaceuticals including small molecules, biologics, and chemotherapy agents. This course is organized to replicate group project work as it is practiced in industry. The class is divided into groups (typically 3 or 4 students) and each group will meet separately each week with the instructor. Hence, there is no regularly scheduled class times; student groups sign up for weekly meeting times using Starfish in Blackboard. These meetings typically will be 90 minutes long. The expectations and assignments for this course are quite different from most other courses. There are no weekly lectures by the instructor. Rather, each week each group will make a PowerPoint presentation on the week's topic or their progress on their project.
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.401. Projects in Design: Alternative Energy. 3.0 Credits.
This course is a group design project (i.e. not a lecture course) to use chemical process simulation tools to model a real-world, alternative-energy process of interest to Chemical and Biomolecular Engineers. The goal of the project will be to develop a process model that is sufficiently complete and robust that it can be used to understand the important factors in the process design and/or operation. This design project is focused on the role alternative energy will play in our country's future. About a third of the course will be devoted to understanding the role of energy and alternative energy in the US and world economies. The remainder of the course will be devoted to a technical and economic analysis of the an alternative energy technology. This course is organized to replicate group project work as it is practiced in industry. The class is divided into groups (typically 3 or 4 students) and each group will meet separately each week with the instructor. Hence, there is no regularly scheduled class times; student groups sign up for weekly meeting times using Starfish in Blackboard. These meetings typically will be 60 minutes long. The expectations and assignments for this course are quite different from most other courses. There are no weekly lectures by the instructor. Rather, each week each group will make a PowerPoint presentation on the week's topic or their progress on their project.
Meets with EN.540.619
Prerequisites: EN.540.202 AND EN.540.203 AND EN.540.301 AND EN.540.305
Instructor(s): M. Donohue
Area: Engineering.

EN.540.402. Metabolic Systems Biotechnology. 3.0 Credits.
The aim of this course is to provide a fundamental understanding of the quantitative principles and methodologies of systems biology and biochemical engineering of metabolism. This includes concepts of cellular growth, cellular stoichiometric models, metabolic networks, metabolite fluxes, and genome-scale metabolic models. Quantitative methods and systems biology approaches for metabolic flux analysis and metabolic control theory will be included as well as an analysis of biochemical systems and bioreactors including a consideration of mass transport processes.
Prerequisites: AS.020.306 OR ( EN.580.440 OR EN.580.441 ) OR EN.540.307
Instructor(s): M. Betenbaugh
Area: Engineering.

EN.540.403. Colloids and Nanoparticles. 3.0 Credits.
Fundamental principles related to interactions, dynamics, and structure in colloidal, nanoparticle, and interfacial systems. Concepts covered include hydrodynamics, Brownian motion, diffusion, sedimentation, electrophoresis, colloidal and surface forces, polymeric forces, aggregation, deposition, and experimental methods. Modern topics related to colloids in nano- science and technology will be discussed throughout the course with frequent references to recent literature.
Meets with EN.540.603
Instructor(s): M. Bevan
Area: Engineering.
EN.540.405. The Design of Biomolecular Systems. 3.0 Credits.
This course covers new topics in the design of systems of biomolecules, both in vitro and in vivo, for decision making and control. The course will begin with an overview of how logical decision making and control with biomolecules as is achieved in biology and then proceed to consider various strategies of engineering similar systems. The focus of the course will be on systems level principles rather than the biochemistry of molecule design. Topics will include engineering of transcriptional networks and genetic control for logically programming of cells, the design of in vitro mimics of genetic controls, molecular computing and systems aspects of metabolic engineering. The course will also cover quantitative and computational techniques for the simulation and analysis of biomolecular systems. Co-listed with EN.540.605
Instructor(s): R. Schulman
Area: Engineering.

EN.540.409. Dynamic Modeling and Control. 4.0 Credits.
Introduction to modeling, dynamics, and control. Unsteady state analysis of biomolecular and chemical process control systems. State space and Laplace transform techniques, block diagram algebra, and transfer functions. Feedback and feedforward control. Frequency response and stability analysis. Applications in chemical engineering (chemical reactors and separative processes) as well as biomolecular engineering (biosynthesis, pharmacokinetic modeling and biomolecular modeling based upon central dogma/gene expression). Introduction to nonlinear dynamics.
Prerequisites: EN.540.301 AND EN.540.306
Instructor(s): A. Goffin
Area: Engineering, Quantitative and Mathematical Sciences.

EN.540.414. Computational Protein Structure Prediction and Design. 3.0 Credits.
This class will introduce the fundamental concepts in protein structure, biophysics, optimization and informatics that have enabled the breakthroughs in computational structure prediction and design. Problems covered will include protein folding and docking, design of ligand-binding sites, design of turns and folds, design of protein interfaces. Class will consist of lectures and hands-on computer workshops. Students will learn to use molecular visualization tools and write programs with the PyRosetta protein structure software suite, including a computational project. Programming experience is recommended.
Instructor(s): J. Gray
Area: Engineering.

EN.540.415. Interfacial Science with Applications to Nanoscale Systems. 3.0 Credits.
Nanostructured materials intrinsically possess large surface area (interface area) to volume ratios. It is this large interfacial area that gives rise to many of the amazing properties and technologies associated with nanotechnology. In this class we will examine how the properties of surfaces, interfaces, and nanoscale features differ from their macroscopic behavior. We will compare and contrast fluid-fluid interfaces with solid-fluid and solid-solid interfaces, discussing fundamental interfacial physics and chemistry, as well as touching on state-of-the-art technologies.
Instructor(s): J. Frechette
Area: Engineering.

EN.540.418. Projects in the Design of a Chemical Car. 2.0 Credits.
Ready to put those concepts from class into practice? Members work over the course of the semester to design and build a chemically powered vehicle that will compete with other college teams at the American Institute of Chemical Engineers (AIChE) Regional Conference. In this course, the students work in small groups to design and construct the chassis along with chemically powered propulsion and break mechanisms within the constraints of the competition. In addition, students will give oral presentation, write reports, and do thorough safety analysis of their prototypes. Both semesters (EN.540.418 and EN.540.419) must be completed with passing grades to receive credit. This course may be repeated.
Instructor(s): L. Dahuron
Area: Engineering.

EN.540.419. Projects in the Design of a Chemical Car. 2.0 Credits.
Ready to put those concepts from class into practice? Members work over the course of the semester to design and build a chemically powered vehicle that will compete with other college teams at the American Institute of Chemical Engineers (AIChE) Regional Conference. In this course, the students work in small groups to design and construct the chassis along with chemically powered propulsion and break mechanisms within the constraints of the competition. In addition, students will give oral presentation, write reports, and do thorough safety analysis of their prototypes. Both semesters (EN.540.418 and EN.540.419) must be completed with passing grades to receive credit. This course may be repeated.
Instructor(s): L. Dahuron
Area: Engineering.

EN.540.421. Project in Design: Pharmacodynamics. 3.0 Credits.
It is a design course in which the design projects will be to develop pharmacodynamic models of the human body that can be used to understand the physiologic effects of drugs on the body. The course (and software to be developed) will cover the spectrum of ways in which pharmaceuticals affect human physiology. The goal is to develop process models of the human body that will predict pharmaceutical effects as a function of time and organ (or cell) type that will work for a wide variety of pharmaceuticals including small molecules, biologics, and chemotherapy agents. This course is organized to replicate group project work as it is practiced in industry. The class is divided into groups (typically 3 or 4 students) and each group will meet separately each week with the instructor. Hence, there is no regularly scheduled class times; student groups sign up for weekly meeting times using Starfish in Blackboard. These meetings typically will be 90 minutes long. The expectations and assignments for this course are quite different from most other courses. There are no weekly lectures by the instructor. Rather, each week each group will make a PowerPoint presentation on the week's topic or their progress on their project. Prerequisites 540.421 has a prerequisite of 540.400 Pharmacokinetics
Prerequisites: EN.540.400
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.
EN.540.422. Introduction to Polymeric Materials. 3.0 Credits.
Polymeric materials are ubiquitous in our society from Nature-made proteins and polysaccharides to synthetic plastics and fibers. Their applications range from day-to-day consumables to high performance materials used in critically demanding areas, such as aviation, aerospace and medical devices. The objective of this course is to provide an introductory overview on the field of polymer science and engineering. Students will learn some basic concepts in polymer synthesis, characterization, and processing. With the basic concepts established, industrial applications of polymeric materials will be discussed in two categories: structural polymers and functional polymers. Structural polymers, including plastics, fibers, rubbers, coatings, adhesives, and composites, will be discussed in terms of their structure, processing, and property relationship with a flavor of industrial relevant products and applications. Future trends in developing environmentally friendly polymers from renewable resources ("green polymer chemistry") will also be covered. Lectures on functional polymers will be focused on their unique properties that are enabled by rational molecular design, controlled synthesis and processing (e.g. supramolecular assembly, and microfabrication). This class of specialty materials can find their use in high performance photovoltaics, batteries, membranes, and composites, and can also serve as "smart" materials for use in coatings, sensors, medical devices, and biomimicry. 
Instructor(s): H. Cui; K. Qi
Area: Engineering.

EN.540.428. Supramolecular Materials and Nanomedicine. 3.0 Credits.
Nanomedicine is a quickly growing area that exploits the novel chemical, physical, and biological properties of nanostructures and nanostructured materials for medical treatments. This course presents basic design principles of constructing nanomaterials for use in drug delivery, disease diagnosis and imaging, and tissue engineering. Three major topics will be discussed, including 1) nanocarriers for drug delivery that are formed through soft matter assembly (e.g., surfactants, lipids, block copolymers, DNA, polyelectrolytes, peptides), 2) inorganic nanostructures for disease diagnosis and imaging (e.g., nanoparticles of gold and silver, quantum dots and carbon nanotubes), and 3) supramolecular scaffolds for tissue engineering and regenerative medicine. Students are expected to learn the physical, chemical and biological properties of each nanomaterial, the underlying physics and chemistry of fabricating such materials, as well as their advantages and potential issues when used for biomedical applications. This course will also provide students opportunities for case studies on commercialized nanomedicine products. After this class, students should gain a deeper understanding of current challenges in translating nanoscience and nanotechnology.
Instructor(s): H. Cui
Area: Engineering.

EN.540.436. Design: Pharmacokinetics/Dynamics. 3.0 Credits.
This is a one semester overview of year long course; students that want a comprehensive understanding of pharmacokinetics and pharmacodynamics should take the 2 courses EN.540.400 and EN.540.421. This course covers the principles of pharmacokinetics and pharmacodynamics. Computer models of pharmacokinetic and pharmacodynamic behavior will be developed and then used to design better drug delivery regimens and to analyze drug chemistry modifications. The course (and software to be developed) will cover the spectrum of factors affecting pharmaceutical effects on physiology including drug formulation, mode of dosing and dosing rate, metabolism and metabolic cascades, storage in fatty tissues, and diffusional limitations (such as in crossing the blood-brain barrier or diffusional differences between normal and cancerous tissues). This course is organized to replicate group project work as it is practiced in industry. The class is divided into groups (typically 3 or 4 students) and each group will meet separately each week with the instructor. Hence, there is no regularly scheduled class times; student groups sign up for weekly meeting times using Starfish in Blackboard. These meetings typically will be 90 minutes long. The expectations and assignments for this course are quite different from most other courses. There are no weekly lectures by the instructor. Rather, each week each group will make a PowerPoint presentation on the week's topic or their progress on their project. Prerequisites 540.436 has a prerequisite of 540.301 Kinetic Processes.
Prerequisites: EN.540.301
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.437. Application of Molecular Evolution to Biotechnology. 3.0 Credits.
One of the most promising strategies for successfully designing complex biomolecular functions is to exploit nature's principles of evolution. This course provides an overview of the basics of molecular evolution as well as its experimental implementation. Current research problems in evolution-based biomolecular engineering will be used to illustrate principles in the design of biomolecules (i.e. protein engineering, RNA/ DNA engineering), genetic circuits and complex biological systems including cells. Meets with EN.540.637
Prerequisites: AS.020.305 OR EN.580.221 OR permission of instructor.
Instructor(s): M. Ostermeier
Area: Engineering, Natural Sciences.

EN.540.438. Advanced Topics in Pharmacokinetics and Pharmacodynamics I. 3.0 Credits.
This course involves a semester-long project in pharmacodynamics. Topics are chosen in consultation with instructor.
Prerequisites: EN.540.400 AND (EN.540.421 OR EN.540.436)
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.439. Advanced Topics in Pharmacokinetics and Pharmacodynamics II. 3.0 Credits.
This course involves a semester-long project in pharmacodynamics. Topics are chosen in consultation with instructor.
Prerequisites: EN.540.421 OR EN.540.436
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.
EN.540.440. Micro/Nanotechnology: The Science and Engineering of Small Structures. 3.0 Credits.
The field of micro / nanotechnology has been gaining tremendous momentum as evidenced by an explosive rise in the number of publications, patents and commercial activities. This is an introductory course intended to expose students to the field as well as real world applications. Lectures will include an overview of scaling of material properties at the nanoscale, micro and nanofabrication methods and essential analytical tools of relevance to the field. All through the course, we will go over electronic, optical and biological applications of emerging micro and nanoscale devices and materials. Co-listed with EN.540.640.
Instructor(s): D. Gracias
Area: Engineering.

EN.540.452. Eukaryotic Cell Biotechnology. 2.0 Credits.
This course involves integrated lecture/discussion and laboratory components to review and participate in current and emerging topics involving eukaryotic biotechnology. Lectures and discussions review how fundamentals of biochemical kinetics and biomolecular engineering are connected to emerging problems in mammalian, algal, and stem cell biotechnology. Laboratory activities are connected to diverse scientific and technological fundamental topics on these same themes. Journal article and research presentations provide a context for laboratory activities with respect to emerging industrial applications for eukaryotic cell types. Research design and strategy is discussed in terms of its ultimate implementation in laboratory, pilot plant, and eventually manufacturing facilities. Methodologies implemented include cell and metabolic engineering for improving yields and production rates of proteins, cells, and tissues. Example topics include expansion of mammalian, stem cells, and algae for the production of membrane proteins, biologics, biofuels, and complex metabolites. Consent of instructor only.
Instructor(s): M. Betenbaugh
Area: Engineering.

EN.540.455. Current Topics in DNA Nanotechnology Practicum. 3.0 Credits.
Research laboratory elective course where students can learn DNA nanotechnology and build nanostructures.
Instructor(s): R. Schulman.

EN.540.460. Polymer Physics. 3.0 Credits.
This course will cover the physics aspect of macromolecular/polymeric materials. We will discuss the molecular origin of key physical phenomena, such as chain relaxation, time temperature superposition, free volume, high strain rate behavior, phase transitions, flow and fracture as well as physical aging. Many real world examples will be used throughout the course. We will also discuss the recent advances in biopolymers, polymers for 3D printing, electro-spinning and polymers for tissue engineering. Students should have introductory training in Materials Science.
Prerequisites: AS.030.101 AND AS.171.101
Instructor(s): Z. Xia
Area: Engineering, Natural Sciences.

EN.540.462. Polymer Design and Bioconjugation. 3.0 Credits.
This course will focus on conventional to most recent inventions on polymer and conjugation chemistry. The weekly lectures will include the reaction strategy, designs and characterization techniques, structure-property relationship, simplistic approaches and versatile application oriented-solutions to Biomaterials and Tissue engineering related challenges. Students will learn how to devise creative strategies, process design and product development. Preliminary knowledge of organic chemistry is expected.
Instructor(s): A. Singh
Area: Engineering, Natural Sciences.

EN.540.465. Engineering Principles of Drug Delivery. 3.0 Credits.
Fundamental concepts in drug delivery from an engineering perspective. Biological organisms are viewed as highly interconnected networks where the surfaces/interfaces can be activated or altered ‘chemically’ and ‘physically/mechanically’. The importance of intermolecular and interfacial interactions on drug delivery carriers is the focal point of this course. Topics include: drug delivery mechanisms (passive, targeted); therapeutics modalities and mechanisms of action; engineering principles of controlled release and quantitative understanding of drug transport (diffusion, convection); effects of electrostatics, macromolecular conformation, and molecular dynamics on interfacial interactions; thermodynamic principles of self-assembly; chemical and physical characteristics of delivery molecules and assemblies (polymer based, lipid based); significance of biodistributions and pharmacokinetic models; toxicity issues and immune responses.
Prerequisites: Students may take EN.540.465 or EN.540.665, but not both.
Instructor(s): S. Sofou
Area: Engineering, Natural Sciences.

EN.540.468. Introduction to Nonlinear Dynamics and Chaos. 3.0 Credits.
An introduction to the phenomenon of nonlinear dynamic behavior with emphasis on models of actual physical, chemical, and biological systems, involving an interdisciplinary approach to ideas from mathematics, computing, and modeling. The common features of the development of chaotic behavior in both mathematical models and experimental studies are stressed, and the use of modern data-mining tools to analyze dynamic data will be explored. Knowledge of Linear Algebra and Ordinary Differential Equations is a prerequisite (at an undergraduate level); Some computing experience is desirable. Emphasis will be placed on the geometric/visual computer-aided description and understanding of dynamics and chaos.
Prerequisites: Students may receive credit for only one of EN.553.473 OR EN.553.673 OR EN.540.468 OR EN.540.668;((AS.110.201 OR AS.110.212) AND (AS.110.302 OR AS.110.306)) OR EN.553.291
Instructor(s): Y. Kevrekidis
Area: Engineering, Quantitative and Mathematical Sciences.

EN.540.490. Introduction to Chemical Process Safety. 1.0 Credit.
An elementary introduction to chemical process safety, this course covers a selection of topics in chemical process safety analysis and management, taken against the backdrop of real processes and process accidents. Topics include materials compatibility, risk assessment, reactive chemical hazard, process hazard analysis via the HAZOP method, fire/explosion and toxic release incidents, incident investigation, inerting with nitrogen, and Inherently Safer Design
Prerequisites: EN.540.203 AND EN.540.303
Instructor(s): D. Kuespert
Area: Engineering.

EN.540.501. Independent Research. 3.0 Credits.
Instructor(s): Staff.
EN.540.602. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): J. Frechette; K. Konstantopoulos; M. Donohue; M. Ostermeier; S. Gerecht.

EN.540.503. Independent Research. 0.0 - 3.0 Credits.
Instructor(s): Staff.

EN.540.509. Undergraduate Internship. 1.0 Credit.
Internship unpaid and approved by ChemBE faculty.

EN.540.511. Group Undergraduate Research. 1.0 - 3.0 Credits.
Students do individual projects (or in collaboration with faculty and/or graduate students) in areas basic to chemical engineering. This section has weekly research group meeting that students are expected to attend. Instructor(s): Staff.

EN.540.513. Group Undergraduate Research. 1.0 - 3.0 Credits.
Students do individual projects (or in collaboration with faculty and/or graduate students) in areas basic to chemical engineering. This section has weekly research group meeting that students are expected to attend. Instructor(s): Staff.

EN.540.522. Independent Research. 0.0 - 3.0 Credits.
Instructor(s): Staff.

EN.540.596. Summer Internship.
Summer internship paid and approved by ChemBE faculty. Instructor(s): Staff.

EN.540.597. Research. 3.0 Credits.
Instructor(s): Staff.

EN.540.598. Summer Internship. 1.0 Credit.
Summer internship unpaid and approved by ChemBE faculty. Instructor(s): D. Wirtz; G. Drazer; H. Cui.

EN.540.599. Independent Study - Summer. 0.0 - 3.0 Credits.
Instructor(s): Staff.

EN.540.600. Chemical and Biomolecular Engineering Seminar. 1.0 Credit.
Lectures are presented on current subjects relevant to chemical engineering. Attendance at 80% of departmental seminars is required to receive credit for this class. Instructor(s): C. Wang; S. Sofou Area: Engineering.

EN.540.601. Chemical and Biomolecular Engineering Seminar. 1.0 Credit.
Instructor(s): C. Wang; S. Sofou Area: Engineering.

EN.540.602. Metabolic Systems Biotechnology. 3.0 Credits.
The aim of this course is to provide a fundamental understanding of the quantitative principles and methodologies of systems biology and biochemical engineering of metabolism. This includes concepts of cellular growth, cellular stoichiometric models, metabolic networks, metabolite fluxes, and genome-scale metabolic models. Quantitative methods and systems biology approaches for metabolic flux analysis and metabolic control theory will be included as well as an analysis of biochemical systems and bioreactors including a consideration of mass transport processes. Instructor(s): M. Betenbaugh Area: Engineering.

EN.540.603. Colloids and Nanoparticles. 3.0 Credits.
Fundamental principles related to interactions, dynamics, and structure in colloidal, nanoparticle, and interfacial systems. Concepts covered include hydrodynamics, Brownian motion, diffusion, sedimentation, electrophoresis, colloidal and surface forces, polymeric forces, aggregation, deposition, and experimental methods. Modern topics related to colloids in nano-science and technology will be discussed throughout the course with frequent references to recent literature. Meets with EN.540.403 Instructor(s): M. Bevan Area: Engineering.

EN.540.604. Transport Phenomena in Practice. 3.0 Credits.
Required course for ChemBE Masters students Instructor(s): L. Santhanam Area: Engineering, Quantitative and Mathematical Sciences.

EN.540.605. The Design of Biomolecular Systems. 3.0 Credits.
This course covers new topics in the design of systems of biomolecules, both in vitro and in vivo, for decision making and control. The course will begin with an overview of how logical decision making and control with biomolecules as is achieved in biology and then proceed to consider various strategies of engineering similar systems. The focus of the course will be on systems level principles rather than the biochemistry of molecule design. Topics will include engineering of transcriptional networks and genetic control for logically programming of cells, the design of in vitro mimics of genetic controls, molecular computing and systems aspects of metabolic engineering. The course will also cover quantitative and computational techniques for the simulation and analysis of biomolecular systems. Co-listed with EN.540.405 Instructor(s): R. Schulman Area: Engineering.

EN.540.606. Chemical & Biomolecular Separation. 3.0 Credits.
This course covers staged and continuous-contacting separations processes critical to the chemical and biochemical industries. Separations technologies studied include distillation, liquid-liquid extraction, gas absorption, membrane ultrafiltration, reverse osmosis, dialysis, adsorption, and chromatography. Particular emphasis is placed on the biochemical uses of these processes and consequently on how the treatment of these processes differs from the more traditional approach. Only with permission of the instructor. Co-listed with EN.540.306 Instructor(s): M. Betenbaugh.

EN.540.610. Chemical and Biomolecular Engineering Design: Spring. 3.0 Credits.
This course is one part of a two semester sequence. This course guides the student through the contrasting aspects of product design and of process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the selection of best products to fulfill the needs. Process design concerns the quantitative description of processes which serve to produce many commodity chemicals, the estimation of process profitability, and the potential for profitability improvement through incremental changes in the process. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the primary objectives of the course. Students report several times both orally and in writing on their accomplishments. Laboratory tests can be performed and/or prototypes can be made. Note that both courses, 540.609 and 540.610 must be taken, the two courses can be started in any term. Instructor(s): M. Donohue Area: Engineering.
EN.540.614. Computational Protein Structure Prediction and Design. 3.0 Credits.
This class will introduce the fundamental concepts in protein structure, biophysics, optimization and informatics that have enabled the breakthroughs in computational structure prediction and design. Problems covered will include protein folding and docking, design of ligand-binding sites, design of turns and folds, design of protein interfaces. Class will consist of lectures and hands-on computer workshops. Students will learn to use molecular visualization tools and write programs with the PyRosetta protein structure software suite, including a computational project. Programming experience is recommended.
Instructor(s): J. Gray
Area: Engineering.

EN.540.615. Interfacial Science with Applications to Nanoscale Systems. 3.0 Credits.
Nanostructured materials intrinsically possess large surface area (interface area) to volume ratios. It is this large interfacial area that gives rise to many of the amazing properties and technologies associated with nanotechnology. In this class we will examine how the properties of surfaces, interfaces, and nanoscale features differ from their macroscopic behavior. We will compare and contrast fluid-fluid interfaces with solid-fluid and solid-solid interfaces, discussing fundamental interfacial physics and chemistry, as well as touching on state-of-the-art technologies.
Instructor(s): J. Frechette
Area: Engineering.

EN.540.619. Projects in Design: Alternative Energy. 3.0 Credits.
This course is a group design project (i.e. not a lecture course) to use chemical process simulation tools to model a real-world, alternative-energy process of interest to Chemical and Biomolecular Engineers. The goal of the project will be to develop a process model that is sufficiently complete and robust that it can be used to understand the important factors in the process design and/or operation. This design project is focused on the role alternative energy will play in our country's future.
About a third of the course will be devoted to understanding the role of energy and alternative energy in the US and world economies. The remainder of the course will be devoted to a technical and economic analysis of an alternative energy technology. This course is organized to replicate group project work as it is practiced in industry. The class is divided into groups (typically 3 or 4 students) and each group will meet separately each week with the instructor. Hence, there is no regularly scheduled class times; student groups sign up for weekly meeting times using Starfish in Blackboard. These meetings typically will be 60 minutes long. The expectations and assignments for this course are quite different from most other courses. There are no weekly lectures by the instructor. Rather, each week each group will make a PowerPoint presentation on the week’s topic or their progress on their project.
Graduate level. Meets with EN.540.401
Prerequisites: EN.540.202 AND EN.540.203 AND EN.540.301 AND EN.540.305
Instructor(s): M. Donohue
Area: Engineering.

EN.540.621. Project in Design: Pharmacodynamics. 3.0 Credits.
This course covers pharmacodynamics, i.e. how pharmaceuticals affect biological processes. The course will use MatLab to aid in the design of new drug formulations.
Prerequisites: EN.540.632
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.622. Introduction to Polymeric Materials. 3.0 Credits.
Polymeric materials are ubiquitous in our society from Nature-made proteins and polysaccharides to synthetic plastics and fibers. Their applications range from day-to-day consumables to high performance materials used in critically demanding areas, such as aviation, aerospace and medical devices. The objective of this course is to provide an introductory overview on the field of polymer science and engineering. Students will learn some basic concepts in polymer synthesis, characterization, and processing. With the basic concepts established, industrial applications of polymeric materials will be discussed in two categories: structural polymers and functional polymers. Structural polymers, including plastics, fibers, rubbers, coatings, adhesives, and composites, will be discussed in terms of their structure, processing, and property relationship with a flavor of industrial relevant products and applications. Future trends in developing environmentally friendly polymers from renewable resources ("green polymer chemistry") will also be covered. Lectures on functional polymers will be focused on their unique properties that are enabled by rational molecular design, controlled synthesis and processing (e.g. supramolecular assembly, and microfabrication). This class of specialty materials can find their use in high performance photovoltaics, batteries, membranes, and composites, and can also serve as "smart" materials for use in coatings, sensors, medical devices, and biomimicry.
Instructor(s): H. Cui; K. Qi
Area: Engineering.

EN.540.628. Supramolecular Materials and Nanomedicine. 3.0 Credits.
Nanomedicine is a quickly growing area that exploits the novel chemical, physical, and biological properties of nanostructures and nanostructured materials for medical treatments. This course presents basic design principles of constructing nanomaterials for use in drug delivery, disease diagnosis and imaging, and tissue engineering. Three major topics will be discussed, including 1) nanocarriers for drug delivery that are formed through soft matter assembly (e.g., surfactants, lipids, block copolymers, DNA, polyelectrolytes, peptides), 2) inorganic nanostructures for disease diagnosis and imaging (e.g., nanoparticles of gold and silver, quantum dots and carbon nanotubes), and 3) supramolecular scaffolds for tissue engineering and regenerative medicine. Students are expected to learn the physical, chemical and biological properties of each nanomaterial, the underlying physics and chemistry of fabricating such material, as well as their advantages and potential issues when used for biomedical applications. The class will also provide students opportunities for case studies on commercialized nanomedicine products. After this class, students should gain a deeper understanding of current challenges in translating nanoscience and nanotechnology into medical therapies.
Instructor(s): H. Cui
Area: Engineering, Natural Sciences.
EN.540.630. Thermodynamics, Statistical Mechanics, and Kinetics. 3.0 Credits.
In this course we will aim for understanding the thermodynamics of chemical and bio-molecular systems. We will first review classical, macroscopic thermodynamics covering concepts such as equilibrium, stability and the role of thermodynamic potentials. Our goal will be to gain a feel for the generality of thermodynamics. Statistical mechanics provides a link between the mechanics of atoms and macroscopic thermodynamics. We will introduce this branch in two distinct ways: 1) following standard methods of developing concepts such as ensembles and partition functions, and 2) where we will treat the basis of statistical mechanics as a problem in inference. With this foundation, we will consider concepts relevant to understanding the liquid state. Chemical transformations in a liquid are of importance in much of chemistry and biology; quasi-chemical generalizations of the potential distribution theorem will be introduced to present these ideas. We hope to give an overview of modern developments relating equilibrium work to non-equilibrium work, as these are of increasing importance in studies on single molecule systems. Registration by instructor permission only. Instructor(s): C. Wang
Area: Engineering.

EN.540.632. Project in Design: Pharmacokinetics. 3.0 Credits.
This is a design course in which the design projects will be to develop pharmacokinetic models of the human body that can be used to understand the temporal distribution, spatial distribution and bioavailability of pharmaceutical drugs. The course (and software to be developed) will cover the spectrum of factors affecting pharmaceutical bioavailability including drug formulation, mode of dosing and dosing rate, metabolism and metabolic cascades, storage in fatty tissues, and diffusional limitations (such as in crossing the blood-brain barrier or diffusional differences between normal and cancerous cells). The goal is to develop process models of the human body that will predict pharmaceutical bioavailability as a function of time and organ (or cell) type that will work for a wide variety of pharmaceuticals including small molecules, biologics, and chemotherapy agents. This course is organized to replicate group project work as it is practiced in industry. The class is divided into groups (typically 3 or 4 students) and each group will meet separately each week with the instructor. Hence, there is no regularly scheduled class times; student groups sign up for weekly meeting times using Starfish in Blackboard. These meetings typically will be 90 minutes long. The expectations and assignments for this course are quite different from most other courses. There are no weekly lectures by the instructor. Rather, each week each group will make a PowerPoint presentation on the week’s topic or their progress on their project.
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.636. Design: Pharmacokinetics/Dynamics. 3.0 Credits.
One semester overview of year long course, students that want a comprehensive understanding of pharmacokinetics and pharmacodynamics should take the 2 all 540.632 Projects in Design: Pharmacokinetics Spring 540.621 Projects in Design: Pharmacodynamics. This course covers the principles of pharmacokinetics and pharmacodynamics. Computer models of the pharmacokinetic and pharmacodynamic behavior will be developed and then used to design better drug delivery regimens and to analyze drug chemistry modifications.
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.637. Application of Molecular Evolution to Biotechnology. 3.0 Credits.
One of the most promising strategies for successfully designing complex biomolecular functions is to exploit nature’s principles of evolution. This course provides an overview of the basics of molecular evolution as well as its experimental implementation. Current research problems in evolution-based biomolecular engineering will be used to illustrate principles in the design of biomolecules (i.e. protein engineering, RNA/ DNA engineering), genetic circuits and complex biological systems including cells. A course in Biochemistry or Molecular Biology is recommended. Meets with EN.540.437
Instructor(s): M. Ostermeier
Area: Engineering, Natural Sciences.

EN.540.638. Advanced Topics in Pharmacokinetics and Pharmacodynamics I. 3.0 Credits.
This course involves a semester-long project in pharmacodynamics. Topics are chosen in consultation with instructor.
Prerequisites: EN.540.400 AND EN.540.421 OR EN.540.436
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.639. Advanced Topics in Pharmacokinetics and Pharmacodynamics II. 3.0 Credits.
This course involves a semester-long project in pharmacodynamics. Topics are chosen in consultation with instructor.
Prerequisites: EN.540.400 AND EN.540.421 OR EN.540.436
Instructor(s): M. Donohue
Area: Engineering, Natural Sciences.

EN.540.640. Micro/Nanotechnology: The Science and Engineering of Small Structures. 3.0 Credits.
The field of micro / nanotechnology has been gaining tremendous momentum as evidenced by an explosive rise in the number of publications, patents and commercial activities. This is an introductory course intended to expose students to the field as well as real world applications. Lectures will include an overview of scaling of material properties at the nanoscale, micro and nanofabrication methods and essential analytical tools of relevance to the field. All through the course, we will go over electronic, optical and biological applications of emerging micro and nanoscale devices and materials. Co-listed with EN.540.440.
Instructor(s): D. Gracias.

EN.540.652. Advanced Transport Phenomena. 3.0 Credits.
It is the goal of this course to move the graduate student (and advanced undergraduate student) from the introductory level of transport phenomena (undergraduate) to a level that will allow them to be effective in researching transport-related topics in a variety of biomedical, chemical and biochemical engineering areas. The basic equations that govern mass, momentum, and energy transport will be derived and used to solve problems that demonstrate the physical insight necessary to apply these equations to original situations. Some topics include solution techniques utilizing expansions of harmonic functions, singularity solutions, lubrication theory for flow in confined geometries, boundary layer theory, Stokes flow, forced convection, buoyancy-driven flow, Taylor-Aris dispersion, and reaction-diffusion.
Instructor(s): Z. Gagnon
Area: Engineering.
EN.540.660. Polymer Physics. 3.0 Credits.
This course will cover the physics aspect of macromolecular/polymeric materials. We will discuss the molecular origin of key physical phenomena, such as chain relaxation, time temperature superposition, free volume, high strain rate behavior, phase transitions, flow and fracture as well as physical aging. Many real world examples will be used throughout the course. We will also discuss the recent advances in biopolymers, polymers for 3D printing, electro-spinning and polymers for tissue engineering. Students should have introductory training in Materials Science.
Instructor(s): Z. Xia
Area: Engineering, Natural Sciences.

EN.540.661. Nanobioengineering Laboratory. 3.0 Credits.
Students explore different experimental methodologies in Nanobioengineering. Students work in small teams to complete one or more major projects expanding their understanding and applying their theoretical knowledge to practical problems. The course will employ a variety of experimental methods, from material synthesis to biological applications. Students report several times either orally and in writing on their accomplishments. Project meetings may be held outside of the appointed class time. Graduate students only.
Instructor(s): A. Goffin; X. Wan.

EN.540.662. Polymer Design and Bioconjugation. 3.0 Credits.
This course will focus on conventional to most recent inventions on polymer and conjugation chemistry. The weekly lectures will include the reaction strategy, designs and characterization techniques, structure-property relationship, simplistic approaches and versatile application oriented-solutions to Biomaterials and Tissue engineering related challenges. Students will learn how to devise creative strategies, process design and product development.
Instructor(s): A. Goffin; X. Wan.

EN.540.663. Thermodynamic Independent Study. 3.0 Credits.
In this course, we will discuss the important role that thermodynamics plays in chemical engineering practice. After a short review of the first and second laws, we will examine how thermodynamic concepts affect mass and energy balances. We will discuss the properties of systems containing pure species and mixtures and how to analyze the behavior of ideal and real systems. We will estimate heat effects associated with temperature change, phase change, and chemical reaction. The theory associated with properties of pure fluids will be discussed along its application to flow processes. We will present the framework for understanding solution thermodynamics and mixing. Applications of thermodynamics especially important to chemical engineers, such as vapor-liquid equilibrium in distillation and chemical reaction equilibrium in kinetics and reaction engineering, will be discussed. Examples will serve to illustrate how thermodynamic calculations are an integral part of the design and optimization of chemical processes.
Instructor(s): C. Pereira
Area: Engineering.

EN.540.665. Engineering Principles of Drug Delivery. 3.0 Credits.
Fundamental concepts in drug delivery from an engineering perspective. Biological organisms are viewed as highly interconnected networks where the surfaces/interfaces can be activated or altered 'chemically' and 'physically/mechanically'. The importance of intermolecular and interfacial interactions on drug delivery carriers is the focal point of this course. Topics include: drug delivery mechanisms (passive, targeted); therapeutic modalities and mechanisms of action; engineering principles of controlled release and quantitative understanding of drug transport (diffusion, convection); effects of electrostatics, macromolecular conformation, and molecular dynamics on interfacial interactions; thermodynamic principles of self-assembly; chemical and physical characteristics of delivery molecules and assemblies (polymer based, lipid based); significance of biodistributions and pharmacokinetic models; toxicity issues and immune responses.
Prerequisites: Students may take EN.540.465 or EN.540.665, but not both.
Instructor(s): S. Sofou
Area: Engineering, Natural Sciences.

EN.540.666. Introduction to Nonlinear Dynamics and Chaos. 3.0 Credits.
An introduction to the phenomenology of nonlinear dynamic behavior with emphasis on models of actual physical, chemical, and biological systems, involving an interdisciplinary approach to ideas from mathematics, computing, and modeling. The common features of the development of chaotic behavior in both mathematical models and experimental studies are stressed, and the use of modern data-mining tools to analyze dynamic data will be explored. Knowledge of Linear Algebra and Ordinary Differential Equations is a prerequisite (at an undergraduate level); Some computing experience is desirable. Emphasis will be placed on the geometric/visual computer-aided description and understanding of dynamics and chaos.
Prerequisites: Students may receive credit for only one of EN.553.473 OR EN.553.672 OR EN.540.468 OR EN.540.668.;((AS.110.201 OR AS.110.302 OR AS.110.306) OR EN.553.291)[C]
Instructor(s): Y. Kevrekidis
Area: Engineering, Quantitative and Mathematical Sciences.

EN.540.671. Advanced Thermodynamics in Practice. 3.0 Credits.
In this course, we will discuss the important role that thermodynamics plays in chemical engineering practice. After a short review of the first and second laws, we will examine how thermodynamic concepts affect mass and energy balances. We will discuss the properties of systems containing pure species and mixtures and how to analyze the behavior of ideal and real systems. We will estimate heat effects associated with temperature change, phase change, and chemical reaction. The theory associated with properties of pure fluids will be discussed along its application to flow processes. We will present the framework for understanding solution thermodynamics and mixing. Applications of thermodynamics especially important to chemical engineers, such as vapor-liquid equilibrium in distillation and chemical reaction equilibrium in kinetics and reaction engineering, will be discussed. Examples will serve to illustrate how thermodynamic calculations are an integral part of the design and optimization of chemical processes.
Instructor(s): C. Pereira.
EN.540.673. Advanced Chemical Reaction Engineering in Practice. 3.0 Credits.
Chemical reaction engineering deals with the analysis on data and the design of equipment in which reactions occur. Reactors may contain one or more phases and be used to conduct chemical or biochemical transformations. The course will cover the fundamental aspects of kinetics, data acquisition, data interpretation, heterogeneous catalysis and heat and mass transfer for each type of reactor. Special emphasis will be placed on the practical application of reaction engineering in the petrochemical, chemical, biochemical and materials industries. The course will make student aware of the needs and opportunities for chemical reaction engineering in industry.
Instructor(s): C. Pereira
Area: Engineering, Quantitative and Mathematical Sciences.

EN.540.674. Special topics in Chemical and Biomolecular Engineering: Interfaces and Nanotechnology. 3.0 Credits.
In this course, students will explore a range of advanced topics in Chemical and Biomolecular engineering. Interfacial phenomena, nanotechnology, physical chemistry, catalysis, transport phenomena and the interplay between these topics will be studied.
Instructor(s): Staff.

EN.540.675. Special topics in Chemical and Biomolecular Engineering: Molecular and Cellular Bioengineering. 3.0 Credits.
Student will study a variety of topics in molecular and cellular bioengineering. Cellular Biology, protein engineering, drug delivery, tissue engineering and polymer design are a selection of subjects that will be addressed in this course.
Instructor(s): Staff.

EN.540.690. Chemical and Biomolecular Engineering Design. 3.0 Credits.
This course is one part of a two semester sequence in Chemical and Biomolecular Engineering Product Design. It is intended for students in the ChemBE master's program. This course guides the student through the complex process of new product design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the selection of best products to fulfill needs. Students work in small teams to develop a new product idea, design the product and then iterate on prototype development. Students report several times both orally and in writing on their accomplishments. Time is allowed so that laboratory tests can be performed and/or prototypes can be built. Note that generally both courses, 540.609 and 540.610 must be taken to complete the prototype development. The two courses can be started in any term.
Instructor(s): M. Donohue
Area: Engineering.

EN.540.801. Graduate Research. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.540.803. Independent Research. 3.0 - 20.0 Credits.
Instructor(s): Staff.

Cross Listed Courses
Chemistry
Principles and methods for the design and optimization of new biological systems, from a molecular perspective. Topics include: introduction to genetic parts and modern methods for their assembly; synthesis and incorporation of nucleic acids at the level of nucleotides, genes, and genomes; design of genetic programs; library generation and screening; directed evolution and its application to create new proteins and metabolic pathways; computational design of protein and RNA using physical and bioinformatic approaches; non-canonical amino acids and genetic code expansion. This course will also feature critical evaluation of the primary literature in this fast-paced field, and practical experience with relevant software and computational tools.
Instructor(s): S. Fried.

Biomedical Engineering
EN.580.646. Molecular Immunoenengineering. 3.0 Credits.
An in-depth study of the use of biomolecular engineering tools and techniques to manipulate immune function for clinical translation. The course will begin with a broad overview of the immune system, placing a particular emphasis on the molecular-level interactions that determine phenotypic outcomes. The remainder of the curriculum will address ways in which integrative approaches incorporating biochemistry, structural biophysics, molecular biology, and engineering have been used either to stimulate the immune response for applications in cancer and infectious disease, or to repress immune activation for autoimmune disease therapy. Recommended background: Biochemistry and Cell Biology or the BME Molecules and Cells. Those without recommended background should contact the instructor prior to enrolling.
Instructor(s): J. Spangler
Area: Engineering, Natural Sciences.

Institute for NanoBio Technology
EN.670.619. Fundamental Physics and Chemistry of Nanomaterials. 3.0 Credits.
This course will cover the physics and chemistry relevant to the design, synthesis, and characterization of nanoparticles. Topics include nanoparticle synthesis, functionalization, surface engineering, and applications in diagnostics and therapeuticst. The properties of semiconductor quantum dots and magnetic nanoparticles will be reviewed along with techniques for nanoparticle manipulation, particle tracking, and bio-microchrology. Patternning tools including soft lithography, optical lithography, e-beam lithography, and template lithography will be discussed. Electron and scanning probe microscopy will be reviewed. Cross-listed with Materials Science & Engineering and Chemical & Biomolecular Engineering.
Instructor(s): Staff.

Civil Engineering
http://www.civil.jhu.edu/

Civil engineers apply sophisticated analysis and design techniques to advance the needs of society for shelter, infrastructure, and a safe environment. Graduates are employed in the fields of structural analysis and design, soil mechanics and foundation design, environmental engineering and policy, materials engineering, and coastal and ocean engineering, and increasingly are taking on far-reaching management roles in infrastructure, hazard mitigation, sustainability, and technical roles in the planning, design, and construction of large-scale engineered systems. In addition, a civil engineering degree provides exposure to
broad societal challenges and the logical thinking necessary for pursuing careers in other professional fields, such as law, business, and medicine.

The Department of Civil Engineering offers programs at the undergraduate, graduate, and postdoctoral levels. Civil Engineering at Hopkins offers a unique balance centered in mechanics fundamentals, and enriched by state-of-the-art tools in modeling, simulation, and physical experimentation. The small size of the CE Department fosters a collegial, close-knit relationship between the students, staff, and faculty, while our partnerships with other Johns Hopkins departments provide a wide range of collaborative opportunities that span the larger disciplines of systems, structures, and materials. A wide range of research opportunities distinguishes the program. Students have participated in projects on structural reliability, earthquake resistance of structures, testing and analysis of historic bridges, computational design of materials, failure of brittle materials, cold-formed steel members and their connections, and structural fire to name a few. A five-year bachelor’s/master’s degree program is also offered. Graduates of Johns Hopkins University have traditionally risen to leadership roles in education, research, industry, and government.

The department sponsors an undergraduate and graduate seminar series, as well as the Richard J. Carroll endowed lectureship; all of which are designed to bring prominent civil engineers to campus to speak with students and faculty.

Facilities
The Department’s teaching and research labs are located in Latrobe Hall. Teaching laboratories include a modern multi-use facility for exploring experiments in statics, mechanics of materials, dynamics and other courses, and a dedicated soil mechanics laboratory. Research laboratories include the Thin-walled Structures Laboratory, Structural Testing Laboratory, a Structural Materials at High Temperature Laboratory. The Department also possesses its own 3-D printer, fabrication facilities for the purposes of building and maintaining equipment and experiments. The Civil Engineering High Performance Cluster (CE-HPC) is a medium scale high performance computing cluster used primarily for undergraduate research. We are also pleased to provide an undergraduate-only Design Studio and computer lab, as well as office space for doctoral students and a graduate student lounge.

Undergraduate Programs
The Department of Civil Engineering offers an undergraduate program that strives to educate intellectual leaders of the profession by instilling in them a fundamental understanding of the mathematical and physical principles that underlie civil engineering science, an appreciation for the challenges of creative engineering design, and a sense of responsibility for professional service. Civil Engineering is a broad field with many subdisciplines. The Civil Engineering curriculum exposes students to the fields of structural engineering, engineering mechanics, systems engineering, environmental engineering, water resources, and geotechnical engineering.

The program has the following as its objectives:

1. That within a few years of graduation, our graduates will attain one of a. - d. listed below
   a. an advanced degree in engineering or
   b. required experience toward professional licensure as an engineer, or
   c. an advanced degree in a field other than engineering, or
   d. a position within an organization that broadly supports the goals of civil engineering;

2. a position or degree that values adaptability and innovation in their work.

Students graduating with a B.S. in civil engineering will have demonstrated:

- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in lifelong learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

The program has been accredited by the Engineering Accreditation Commission of ABET since 1936.

Requirements for the B.S. Degree
The B.S. degree in civil engineering requires 128 credits. A brief summary of the requirements are listed below. For more detailed information students should look at the Department of Civil Engineering website (http://engineering.jhu.edu/civil/undergraduate-studies). Each student is assigned a faculty advisor who provides the guidance needed to meet these requirements.

Note that no course listed as a requirement may be taken as Satisfactory/Unsatisfactory (S/U) and a maximum of 3 credits from the Humanities and Social Science (H/S) requirements may be taken S/U. Technical electives may be taken S/U only with the approval of the advisor. No more than two grades of D in the required engineering and technical electives may be counted.

<table>
<thead>
<tr>
<th>Basic Sciences (20 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.101 General Physics: Physical Science Major I</td>
</tr>
<tr>
<td>or AS.171.107 General Physics for Physical Sciences Majors (AL)</td>
</tr>
<tr>
<td>AS.171.102 General Physics: Physical Science Major II</td>
</tr>
<tr>
<td>or AS.171.108 General Physics for Physical Science Majors (AL)</td>
</tr>
<tr>
<td>AS.173.111 General Physics Laboratory I</td>
</tr>
<tr>
<td>AS.173.112 General Physics Laboratory II</td>
</tr>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
</tr>
</tbody>
</table>
Students are encouraged to create a program of study that is supplemented by meaningful classes outside of engineering. **

Free Electives

Select 7 credits of free electives

Civil Engineering Fundamentals (34 credits)

EN.560.141 Perspectives on the Evolution of Structures 3
EN.560.201 Statics & Mechanics of Materials 4
EN.560.202 Dynamics 4
EN.560.206 Solid Mechanics & Theory of Structures 3
EN.560.207 Civil Engineering Undergraduate Research Laboratory 1
EN.560.220 Civil Engineering Programming 3
EN.560.351 Introduction to Fluid Mechanics 3
EN.560.305 Soil Mechanics 4
EN.560.320 Structural Design I 3
EN.560.325 Structural Design II 3
EN.560.348 Probability & Statistics in Civil Engineering 3

Professional Practice (12 credits)

In preparation for Professional Practice, students must also take the Fundamentals of Engineering (FE) exam in the spring of their senior year.

EN.661.110 Professional Writing and Communication (or EN.661.300+ CLE Professional Communication) 3
EN.660.361 Engineering Business and Management 3
EN.560.451 Civil Engineering Design I 2
EN.560.452 Civil Engineering Design II 3
EN.560.491 Civil Engineering Seminar I .5
EN.560.492 Civil Engineering Seminar II .5

Technical Areas, select 4 (12 credits)

EN.560.404 Engineering Mechanics 3
EN.570.303 Environmental Engineering Principles and Applications 3
EN.560.330 Foundation Design 3
EN.560.445 Advanced Structural Analysis 3
EN.570.353 Hydrology 3

Technical Electives (9 credits)

Students have the opportunity to explore one or more of the civil engineering technical areas (engineering mechanics, environmental engineering, geotechnical engineering, structural engineering, systems engineering and water resources) in greater depth through technical electives. **

Total Credits = 128

Sample B.S. Program

To view a sample civil engineering program, visit the Civil Engineering website and click on Undergraduate Studies, Academic Advising or click here. (https://engineering.jhu.edu/civil/undergraduate-studies/sample-curriculum) This sample illustrates the general sequence of courses; individual programs may vary as a result of AP credits, study abroad, or pursuit of a minor in another department.

Minor in Civil Engineering

This program is available to nondepartmental majors only who would like an overview of the principles of civil engineering. In addition to the prerequisite courses of AS.171.101 General Physics: Physical Science Major I for Physical Science Majors, AS.110.108 Calculus I, and AS.110.109 Calculus II (For Physical Sciences and Engineering), 17 credits are required for the minor, including 11 credits from fundamental civil engineering courses and 6 credits from a two-course sequence in one of three civil technical areas (geotechnical engineering, structural engineering, or systems engineering). No D grades can be counted toward the minor.

EN.560.141 Perspectives on the Evolution of Structures 3
EN.560.201 Statics & Mechanics of Materials 4
EN.560.206 Solid Mechanics & Theory of Structures 3
EN.560.491 Civil Engineering Seminar I .5
EN.560.492 Civil Engineering Seminar II .5

Students must choose to focus in one of the following three technical areas, completing two courses in one area of their choice.

Structural Engineering

EN.560.320 Structural Design I 3
EN.560.325 Structural Design II 3
EN.560.445 Advanced Structural Analysis 3
Soil Mechanics

perspectives for a lifetime of learning, opportunities, and professional

Thus, private arenas. Its progressive education furthers student understanding
to function in teams and to deal with other professions in public and

program also develops communication skills necessary for its graduates

Our Master of Science and Engineering (M.S.E.) Program develops a

combined-bachelors-masters/.

Combined Bachelor's/Master's Programs

The Department of Civil Engineering offers combined bachelor's/master's
degrees. One program combines a B.S. in Civil Engineering with a Master
of Science in Engineering (M.S.E.) in Civil Engineering. For students who
are admitted to this program, the two degrees typically require five years
total to complete. The other option combines a B.S. in Civil Engineering
with a Master of Science in Engineering Management (M.S.E.M.) (http://
msem.engineering.jhu.edu). Formal application through the M.S.E.M.
Department (http://msem.engineering.jhu.edu) is required. Students
enrolled in a Combined B.S./M.S.E. program are awarded a Dean's
Master's Fellowship, covering half their tuition, after they have completed
eight semesters of undergraduate study. More information about these
programs can be found at http://engineering.jhu.edu/academics/

Financial Aid

Scholarships and other forms of financial assistance for undergraduates
are described under Admissions and Finances (p. 6). In addition, some
undergraduate students are employed by departmental faculty to provide
assistance on research projects.

Graduate Programs

Civil engineering today is a dynamic, complex, and technologically
sophisticated field. Powerful computational methods and high-strength
materials offer new opportunities and new challenges. The Department
of Civil Engineering offers a graduate program that is based primarily in
mechanics of materials, systems, and structures. Fundamental to these
areas is research in solid, structural, and stochastic mechanics. The
graduate program is designed to instill in the student the fundamental
theoretical concepts of mechanics as well as practical knowledge of
modern materials, systems, and structural engineering. To be admitted
to the program, students are expected to have graduated with an
outstanding record in an appropriate undergraduate program.

Master's Program

Our Master of Science and Engineering (M.S.E.) Program develops a
sound understanding of the scientific principles upon which engineering
research and practice are based. Different aspects of learning are
integrated through classroom, laboratory instruction, and independent
study experiences. Graduates of the program possess critical thinking
skills, the ability for both independent and team problem-solving, and
a sense of the excitement of engineering creativity and design. The
program also develops communication skills necessary for its graduates
to function in teams and to deal with other professions in public and
private arenas. Its progressive education furthers student understanding
of the context in which engineering is practiced in modern society. Thus,
the program educates leaders for tomorrow, providing the tools and
perspectives for a lifetime of learning, opportunities, and professional
advancement.

Requirements for the M.S.E. Degree

After admission to the M.S.E. program, students must successfully
comeplete one of two requirements in order to obtain the M.S.E. degree:

Course-Only MSE Requirements

The most common path for JHU Civil Engineering MSE graduates is
to complete the degree through coursework alone. The MSE degree
requirements are as follows:

- 8 courses, 7 of which must be technical.
- All courses must be completed at the 600-level or above.
- 4 of the 8 courses must be from Civil Engineering (EN.560.XXX or
  EN.565.XXX).
- First three semesters must be full-time. The fourth semester can be
  part-time if student satisfies all eligibility requirements.
- No more than one course with a grade lower than a B- may be
counted toward the course requirements. No course with a grade
lower than a C- may be counted toward the degree requirements.
- Transfer credits are not permitted.
- Enrollment in Civil Engineering Graduate Seminar (Fall – EN.560.691,
  Spring – EN.560.692) is required for two semesters.
- Completion of the Academic Ethics short course EN.500.603.
- Completion of Responsible Conduct of Research short course (if
  required) AS.360.624 or AS.360.625.
- Academic advisors, in consultation with the faculty in the Department
  of Civil Engineering, will determine whether the 8 courses leading
to this degree are appropriate and if they have been completed
satisfactorily.
- Students must comply with all requirements stipulated by the Whiting
  School of Engineering Academic Policies and Procedures as outlined
at https://engineering.jhu.edu/graduate-studies/academic-policies-

MSE with Thesis Requirements

The MSE with thesis option is primarily intended for students interested
in pursuing a Ph.D. The requirements are as follows:

- 7 courses (6 of which must be technical).
- Enroll in a two-semester research sequence with research advisor.
- All courses must be completed at the 600-level or above.
- 4 of the 7 courses must be from Civil Engineering (EN.560.XXX or
  EN.565.XXX).
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requirements are as follows:

- 8 courses, 7 of which must be technical.
- All courses must be completed at the 600-level or above.
- 4 of the 8 courses must be from Civil Engineering (EN.560.XXX or
  EN.565.XXX).
- First three semesters must be full-time. The fourth semester can be
  part-time if student satisfies all eligibility requirements.
- No more than one course with a grade lower than a B- may be
counted toward the course requirements. No course with a grade
lower than a C- may be counted toward the degree requirements.
- Transfer credits are not permitted.
- Enrollment in Civil Engineering Graduate Seminar (Fall – EN.560.691,
  Spring – EN.560.692) is required for two semesters.
- Completion of the Academic Ethics short course EN.500.603.
- Completion of Responsible Conduct of Research short course (if
  required) AS.360.624 or AS.360.625.
- Academic advisors, in consultation with the faculty in the Department
  of Civil Engineering, will determine whether the 8 courses leading
to this degree are appropriate and if they have been completed
satisfactorily.
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  School of Engineering Academic Policies and Procedures as outlined
at https://engineering.jhu.edu/graduate-studies/academic-policies-

MSE with Thesis Requirements

The MSE with thesis option is primarily intended for students interested
in pursuing a Ph.D. The requirements are as follows:

- 7 courses (6 of which must be technical).
- Enroll in a two-semester research sequence with research advisor.
- All courses must be completed at the 600-level or above.
- 4 of the 7 courses must be from Civil Engineering (EN.560.XXX or
  EN.565.XXX).
- First three semesters must be full-time. The fourth semester can be
  part-time if student satisfies all eligibility requirements.
- No more than one course with a grade lower than a B- may be
counted toward the course requirements. No course with a grade
lower than a C- may be counted toward the degree requirements.
The relationship between the students, staff, and faculty, while our management, and systems engineering.

The small size of the CE Department fosters a collegial, close-knit relationship between the students, staff, and faculty, while our society. Focal research areas in the Department include structural mechanics, probabilistic methods, hazards engineering, and structural study of the built environment that underpins our society. Its graduates have an appreciation of professional ethics and the value of service to their profession and society through participation in technical activities, and in community, state and national organizations.

Requirements for the Ph.D. Degree

There are a number of Whiting School of Engineering policies related to Ph.D. students, which are listed at http://engineering.jhu.edu/graduate-policies. Ph.D. student requirements for the Civil Engineering Department include:

- 8 Courses, at the 600- or 700-level, completed with a grade of B or better
- Department Qualifying Examination (DQE)
- Graduate Board Oral Examination (GBO)
- Responsible Conduct of Research short course (AS.360.625) and...
- Final Ph.D. Thesis Defense

Typical Timeline for Ph.D. Students

**Year 1 Fall:**
- Arrival prior to start of classes
- Selection of first semester courses (typically 4) with Director of Graduate Studies or research advisor
- Language/communication testing and placement for International Students
- Responsible Conduct of Research (AS.360.625) short course
- Academic Ethics (EN.500.603) short course
- Department Qualifying Examination (DQE) (completed in early January)
- Determination of permanent advisor in first semester

**Year 1 Intersession:**
- Intersession research
- Department Qualifying Exam (DQE) (completed in early January)
- Annual review completed by January 31

**Year 1 Summer:**
- Research

**Year 2 Fall:**
- Research
- Coursework (typically finishing up this semester)
- Ph.D. Thesis Committee Meeting required prior to end of Fall semester

**Year 2 Intersession:**
- Research

Transfer credits are not permitted.

Enrollment in Civil Engineering Graduate Seminar (Fall – EN.560.691, Spring – EN.560.692) is required for two semesters.

Completion of the Academic Ethics short course EN.500.603.

Creation of the Responsible Conduct of Research short course (required) AS.360.624 or AS.360.625.

The student must write a final thesis that is approved by the research advisor and one additional reader who will typically be a full-time Johns Hopkins Civil Engineering faculty member. Any external reader must be approved by the Chair of the Department of Civil Engineering.

The student must present their research in a public forum attended by two members of the WSE faculty or other faculty approved by the Chair of the Department of Civil Engineering.

Academic advisors, in consultation with the faculty in the Department of Civil Engineering, will determine whether the courses leading to this degree are appropriate and if they have been completed satisfactorily.

Students must comply with all requirements stipulated by the Whiting School of Engineering Academic Policies and Procedures as outlined at https://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/.

The MSE with thesis program is expected to be completed in 3-4 semesters with the student enrolled in 2-3 courses per semester in addition to research. Summer research is typical but not necessary and is left to the discretion of the student and advisor.

Note: Seminars, Academic Ethics (EN.500.603) and Responsible Conduct of Research (AS.360.624/625) courses are less than 3 credits each and do not count towards minimum course requirements.

Typically limited financial support is available for M.S.E. students. Funding decisions will be made on an individual basis by the Department of Civil Engineering and will be communicated during the admissions process.

Combined Bachelor’s/Master’s Program

All Combined Bachelor’s/Master’s students must meet the requirements stipulated above for the respective MSE program (course-only or thesis program) with the following exception:

- The Department of Civil Engineering will accept one course from JHU undergraduate studies at the 400-level or above toward the course requirements listed above.

Note: Seminars, Academic Ethics (EN.500.603) and Responsible Conduct of Research (AS.360.624/625) courses are less than 3 credits each and do not count towards minimum course requirements.

1 See the Department Academic Program Coordinator, or Director of Graduate Studies to determine if you are eligible for part-time status.

Ph.D. Program

The PhD program at the Johns Hopkins University Department of Civil Engineering aims to inspire the leaders of tomorrow to take on the challenge of creating and sustaining the built environment that underpins our society. Focal research areas in the Department include structural engineering, structural mechanics, probabilistic methods, hazards management, and systems engineering.

The small size of the CE Department fosters a collegial, close-knit relationship between the students, staff, and faculty, while our partnerships with the Mechanical Engineering, Biomedical Engineering, Materials Science & Engineering, Applied Mathematics & Statistics, Departments of Environmental Health and Engineering, Emergency Medicine, Public Health, and other John Hopkins groups provide a wide range of opportunities that surpasses those of much larger programs.

Students graduate from the program with a sense of the responsibility that the civil engineering profession accepts for applying the principles of engineering sciences for the betterment of the built environment and society. Its graduates have an appreciation of professional ethics and the value of service to their profession and society through participation in technical activities, and in community, state and national organizations.
Year 2 Summer:
- Research

Year 3:
- Research (Year-round)
- Ph.D. Thesis Committee Meeting
- Annual review completed by January 31
- GBO: Exact timing determined by advisor in consultation with the student

Year 4 and Beyond:
- Research (Year-round)
- Ph.D. Thesis Committee Meeting every Fall prior to the end of the semester
- Annual review completed by January 31

Final semester:
- Thesis Defense

Note: Teaching assistant duties may also be assigned during one or more semesters.

Language/Communication Testing and Placement
All Ph.D. students who do not have a prior degree from an English speaking university must take an English Language Assessment. If it is determined at the assessment that the student needs further English language instruction, he/she will be required to take 370.602 or equivalent.

Determination of Permanent Advisor
In some cases students are admitted to work with a specific advisor, in which case the permanent advisor is the faculty member listed in the offer letter. In other cases students are not assigned a specific advisor at the time of the admission letter. During September and October of the first semester, these students should meet with the faculty, discuss their research interests, and learn more about the research being conducted by the faculty. By the beginning of November the student must state his/her preference(s) for a permanent advisor. The faculty will meet and determine the final advisor placements prior to the end of the semester. Every effort will be made to match students with their requested advisors, but financial constraints may not always make this possible.

A Ph.D. student will not be able to remain in good standing with their academic and research progress if they do not have a research advisor. A student who is without a research/dissertation advisor for a period of 3 months may be placed on probation or terminated from the Ph.D. program. Note that it is typically not the role of a department to find an advisor for a student.

Intersession
Intersession (the period between Fall and Spring terms) is an important time for research. Intersession is not a vacation. Any leave taken during intersession is subject to the policies outlined in the Graduate Student Assistant Leave Guidelines (http://engineering.jhu.edu/include/content/pdf/RA_TA%20leave%20guidelines%20(FINAL).pdf). Release time (if any) granted in that period must be approved by the advisor.

Department Qualifying Examination (DQE)

The DQE is a comprehensive oral exam designed to determine whether or not the student is properly prepared to continue in the Ph.D. program. All first-year students studying for a Ph.D. take the DQE after their first semester of enrollment, typically in early January of the first year. This exam tests whether the student is prepared to continue in their Ph.D. studies based on their grasp of basic undergraduate-level and introductory graduate-level Civil Engineering knowledge. Possible outcomes of the exam are Pass or Fail. Only an outcome of Pass will allow the student to continue in the Ph.D. program. If the outcome of the exam is Fail, the student may pursue, with approval from the chair, a M.S.E. degree. Financial support beyond the first academic year is not typical.

Annual Reviews
Reviews of all Ph.D. students in Civil Engineering must be performed annually prior to January 31, and are consistent with the WSE policy found in the Graduate Student Academic Review Policy (https://engineering.jhu.edu/include/content/pdf/Acad%20Review%20Policy%20(FINAL).pdf). The review process follows the format given in the annual review form. The completed form must be submitted to the Academic Program Coordinator by January 31. If this annual review is not completed by this date, the student’s funding may be jeopardized.

Ph.D. Thesis Committee
Every Ph.D. student must have a Thesis Committee of at least 3 faculty members. The advisor, in consultation with his/her student, selects the makeup of the committee, and this information is recorded in the student’s file. The student is encouraged to meet with this committee a minimum of once per year. The thesis committee also typically serves as a subset of the actual GBO examination committee and forms the final Ph.D. defense committee. This committee must consist of a minimum of 2 full-time faculty of the Civil Engineering Department.

Responsible Conduct of Research
Every Ph.D. student of the Whiting School of Engineering is required to take the Responsible Conduct of Research course (details on the requirement can be found on the WSE Policy on the Responsible Conduct of Research Training (http://engineering.jhu.edu/wise-research/resources-policies-forms/responsible-conduct-of-research) webpage. For Civil Engineering students, this should be completed in the Fall or Spring of the first year of studies. Students who do not complete this requirement prior to Fall of their third year of studies may put their funding in jeopardy.

GBO Examination
The University maintains complete guidelines for the Graduate Board Oral exams (http://homewoodgrad.jhu.edu/academics/graduate-board/degree-candidacy). The GBO committee consists of 5 members, (3 in Department, 2 outside) with 2 alternates (1 in Department, 1 outside) and is selected by the Chair of the Department and the Director of Graduate Studies, who will consult with the student’s advisor. When a Ph.D. student and advisor feel that the student is ready to take the GBO, the advisor should consult with the Director of Graduate Studies and the Civil Engineering Academic Program Coordinator to initiate the process of scheduling the exam. Both students and advisors should be aware that 4-6 weeks advance notice is needed in order to allow for scheduling the exam with the faculty and with the Graduate Board.

The exact format of each GBO examination is specified by the individual Chair of the GBO committee. The student may be requested to provide to the GBO committee prior to the examination some written document describing his or her research. In such cases, the latest annual Thesis Committee report and/or a recent conference or journal publication may
suffice. It is typical that the student would be asked to provide a brief presentation of research at the beginning of the examination (no more than 10 slides, no longer than 10 minutes). The examination questions may be on any topic of the committee members’ choosing, but many of the questions relate to the student's coursework and research. At the conclusion of the examination, the GBO committee may recommend pass, conditional pass, fail with re-examination, fail (final) as detailed here (http://homewoodgrad.jhu.edu/academics/graduate-board/graduate-board-oral-exams).

**M.S.E. Degree for Ph.D. Students**
Ph.D. students may petition for a M.S.E. degree following their GBO Examination. If the student passes the GBO, he/she may file for a non-terminal M.S.E. degree. If the student fails (final) the GBO, he/she may petition for a terminal M.S.E. degree. In all instances the students must have satisfied the M.S.E. degree course requirements as detailed here (http://engineering.jhu.edu/civil/graduate-studies/mse-requirements).

In instances where the research is highly interdepartmental, the student, with permission of the advisor, may request that the M.S.E. degree be awarded by another department in the Whiting School of Engineering. In such cases, the student must have satisfied M.S.E. degree requirements and receive the approval of, and an accepted application to, the awarding Department, as well as satisfied M.S.E. degree requirements of the Civil Engineering Department and receive approval from the Civil Engineering Chair. In all cases, the awarding of any JHU M.S.E. degree to a Civil Engineering Ph.D. student may only occur after the student has completed the GBO exam.

**Thesis Defense**
The Thesis Defense is the final examination before conferral of the Ph.D. degree. The student defends his/her thesis in a seminar setting that is open to the public. The seminar is followed by a comprehensive examination of the student, focused on the thesis research.

**Ethics:** The Department of Civil Engineering is dedicated to upholding the highest standards of academic and research integrity. Plagiarism, and other forms of unethical conduct, are not tolerated. Students are referred to the JHU Graduate Board Policy (http://homewoodgrad.jhu.edu/academics/policies) webpage and the Whiting School of Engineering's Responsible Conduct of Research Policy (https://engineering.jhu.edu/wp-content/uploads/2013/07/WSE_Research_Rules.pdf) for a discussion of ethics and university policies.

**Defense Committee:** A committee of at least 3 members administers the exam (typically the Ph.D. Thesis Committee). The Advisor, in consultation with the Department, selects the committee members, at least 2 of whom must be full-time faculty of the Civil Engineering Department. This should be done at the beginning of the semester in which the student plans to graduate.

**Scheduling and Pre-Defense:** The defense should be scheduled at least 3 weeks in advance through the Department’s Academic Coordinator. A complete written dissertation should be given to the committee at least 14 days in advance of the defense. Failure to meet this 2 week deadline will result in rescheduling the Ph.D. defense. The date and place of the defense, along with the thesis abstract, should be circulated 5-7 days prior to the defense.

**Post-Defense:** Completion of the Ph.D. requirements typically takes 4-8 weeks after a successful defense examination. All data and source codes related to the thesis should be properly archived according to requirements set forth by the Advisor. Any changes or additions specifically requested by the reviewers before or during the defense seminar should be incorporated into the thesis in consultation with the Advisor. A final copy of the thesis must then be made available to the reviewers for inspection no less than 48 hours before the deadline date for filing set by the Graduate Board. A receipt of ETD approval email must be sent to the Academic Program Coordinator and the Graduate Board/WSE Office of Academic Affairs (for M.S.E. students).

**Additional Information:** It is the responsibility of the student to be aware of requirements and deadlines. It is suggested that this information be obtained before the start of the semester of intended graduation. All students should plan the timing of the final defense accordingly (making sure to account for the 4-8 week period following the defense) to satisfy any deadlines related to upcoming graduation or exhaustion of funding.

University requirements for the thesis can be obtained from the Sheridan Libraries (https://www.library.jhu.edu/library-services/electronic-theses-dissertations) web site. Doctoral Theses must be submitted to the ETD (Library). The deadline date for filing is set by the Graduate Board Office (https://homewoodgrad.jhu.edu/academics/graduate-board/deadlines).

**Financial Aid**
A limited amount of financial assistance is available to Civil Engineering graduate students in the form of teaching assistantships, research assistantships, including fellowships from the Joseph Meyerhoff Scholarship Fund, the Richard D. Hickman Endowment, and the Hoomes Rich Graduate Fellowship. Fellowships and Assistantships are awarded on a competitive basis and continued support is subject to the student's performance and future availability of research or teaching assistantship funds. In some cases, partial fellowships are offered to outstanding master's students.

For current faculty and contact information go to http://engineering.jhu.edu/civil/faculty/

**Faculty**

**Chair**
Lori Graham-Brady  
Professor

**Professors**
Lori Graham-Brady  
Professor: probabilistic mechanics, finite elements, stochastic modeling of materials.  
Somnath Ghosh  
Professor: structural dynamics, earthquake engineering, analysis of uncertainties.

**Associate Professor**
James K. Guest  
Associate Professor: topology optimization, structural and material design optimization, computational mechanics, architected materials.

**Assistant Professors**
Stavros Gaitaranos
Assistant Professor: design and mechanics of cellular materials at the macro- and nanoscale.

Thomas Gernay
Assistant Professor: structural fire engineering, performance-based structural design, computational mechanics, community resilience assessment.

Michael D. Shields
Assistant Professor: stochastic simulation, uncertainty quantification, computational stochastic mechanics.

Sauleh Siddiqui
Assistant Professor: optimization, equilibrium problems, systems in energy and environmental markets, transportation, and public health.

**Lecturers**

Rachel H. Sangree
Lecturer, Program Chair EP Civil Engineering: structural engineering, historic structures.

Lucas de Melo
Lecturer (part-time): geotechnical engineering.

Matthew Farmer
Lecturer (part-time): brick, stone, and cast stone masonry; facade assessment, repair & rehabilitation design, failure investigation, structural evaluation, testing & instrumentation, historic preservation.

John A. Matteo
Lecturer (part-time): Director of Design: structural engineering and architecture, historic structures.

Edmund Meade
Lecturer (part-time): restoration and renovation, historic preservation.

Gonzalo Pita
Lecturer (part-time): disaster risk modeling, natural hazard simulations, wind and structural engineering, quantitative decision making.

Craig J. Wasilewsky
Lecturer (part-time): repair, rehabilitation and designing structures, historic preservation.

**Associate Research Professor**

Cristopher Moen
Associate Research Professor: computational and experimental mechanics of ductile and brittle materials, simulation of composite structural systems, failure assessment and prediction.

**Professor Emeritus**

Robert A. Dalrymple
Professor and Willard and Lillian Hackerman Chair in Civil Engineering: coastal engineering, water wave mechanics, fluid mechanics.

**Joint Appointment, Professor, Department of Environmental Health and Engineering:** structural health engineering, environmental systems.

Scott Levin
Joint Appointment, Professor, Department of Emergency Medicine: systems engineering in healthcare, optimization of hospital resources and patient outcomes.

Jonathan Links
Joint Appointment, Director, Center for Public Health Preparedness: environmental health sciences, imaging, dosimetry, radiation, dirty bombs, OpenCourseWare, nuclear medicine, radiological terror, public health preparedness.

Alan Stone
Joint Appointment, Professor, Department of Environmental Health and Engineering.

**Adjunct Appointments**

Shahabeddin Torabian
Adjunct Associate Research Scientist: thin-walled structures.

For current course information and registration go to [https://sis.jhu.edu/classes/](https://sis.jhu.edu/classes/)

**Courses**

**EN.560.101. Freshman Experiences in Civil Engineering. 1.0 Credit.**

An introduction to civil engineering for first-year students. This course welcomes freshmen to the major by exploring civil engineering design and the range of design projects in which professional civil engineers engage. Students will have the opportunity to practice the design process using hands-on team-based projects, with emphasis on creative design, graphical communication, and teamwork.

Prerequisites: Students must have completed Lab Safety training prior to registering for this class.

Instructor(s): R. Sangree

Area: Engineering.

**EN.560.141. Perspectives on the Evolution of Structures. 3.0 Credits.**

Why do buildings and bridges look the way they do today? Students will be provided the tools to answer this question for themselves through a study of the history of the design of buildings and bridges throughout the world from both engineering and architectural/aesthetic perspectives. Only simple mathematics is required (no calculus). Students will participate in individual and group critique of structures from engineering, architectural, and social points of view.

Instructor(s): B. Schafer, R. Sangree


**EN.560.201. Statics & Mechanics of Materials. 4.0 Credits.**

Basic principles of classical mechanics applied to the equilibrium of particles and rigid bodies at rest, under the influence of various force systems. In addition, the following topics are studied: free body concept, analysis of simple structures, friction, centroids and centers of gravity, and moments of inertia. Includes laboratory experience.

Prerequisites: Students must have completed Lab Safety training prior to registering for this class.

AS.171.101 OR AS.171.107 OR (EN.530.123 AND EN.530.124) or instructor permission.

Instructor(s): R. Sangree

Area: Engineering.

J. Hugh Ellis
EN.560.202. Dynamics. 4.0 Credits.
Basic principles of classical mechanics applied to the motion of particles, system of particles and rigid bodies. Kinematics: analytical description of motion; rectilinear and curvilinear motions of particles; rigid body motion. Kinetics: force, mass, and acceleration; energy and momentum principles. Introduction to vibration. Includes laboratory experience. **Prerequisites:** Students must have completed Lab Safety training prior to registering for this class. *(EN.560.201 OR EN.530.201) AND AS.110.109*

Instructor(s): L. Graham-Brady; S. Gaitanaros
Area: Engineering.

EN.560.204. Solid Mechanics & Theory of Structures. 3.0 Credits.
Application of the principles of structural analysis for statically determinate and indeterminate structures (trusses, cables, beams, arches, and frames). Calculation of internal forces and stresses in members and structures. Determination of deflections by equilibrium and energy methods. Analysis of indeterminate structures by flexibility and stiffness methods. **Prerequisites:** EN.560.201 OR EN.530.201

Instructor(s): M. Shields
Area: Engineering.

EN.560.205. Civil Engineering Undergraduate Research Laboratory. 1.0 Credit.
Laboratory course to be taken by Civil Engineering students concurrently with EN.560.206 (Solid Mechanics & Theory of Structures). **Prerequisites:** To be taken concurrently with EN.560.206.

Instructor(s): M. Shields
Area: Engineering.

EN.560.220. Civil Engineering Programming. 3.0 Credits.
Civil engineering problems are formulated and then solved by numerical methods. Matrix inversion, data fitting and interpolation, root-finding, and solutions of ordinary and partial differential equations are presented. Matlab programming will be introduced to facilitate the solutions. Recommended Course Background: AS.110.106/AS.110.108, AS.110.107/AS.110.109

Instructor(s): B. Schafer
Area: Engineering.

EN.560.303. Soil Mechanics. 4.0 Credits.
Basic principles of soil mechanics. Classification of soils. Compaction theory. Consolidation seepage and settlement analysis. Stress-strain and shear strength of soils. Introduction to earth pressure theories and slope stability analysis. **Prerequisites:** Students must have completed Lab Safety training prior to registering for this class. *(EN.560.206 OR EN.570.351)*

Instructor(s): L. de Melo
Area: Engineering.

EN.560.320. Structural Design I. 3.0 Credits.
Introduction to structural design using common building materials (structural steel, reinforced concrete, and wood). Emphasis will be placed on the application of solid mechanics principles to the design of structural components (beams, columns, and tension members). **Prerequisites:** EN.560.206

Instructor(s): C. Moen
Area: Engineering.

EN.560.325. Structural Design II. 3.0 Credits.
A continuation of Structural Design I, this course explores the behavior and conceptual design of structures. Emphasis is placed on identifying load paths through typical gravity and lateral load systems, modeling loads on real structures, and designing structural systems. Designing connections capable of transferring loads through a structural system will also be covered. Recommended Course Background: EN.560.320

**Prerequisites:** EN.560.320

Instructor(s): R. Sangree
Area: Engineering.

EN.560.330. Foundation Design. 3.0 Credits.
Application of soil mechanics theory and soil test results to the analysis and design of foundations for structures; retaining walls; embankments; design of pile and shallow footing foundations; slope stability. **Prerequisites:** EN.560.305

Instructor(s): L. de Melo
Area: Engineering.

EN.560.348. Probability & Statistics in Civil Engineering. 3.0 Credits.
Development and applications of the analysis of uncertainty, including basic probability, statistics and decision theory, in civil engineering systems. Recommended Course Background: AS.110.109

**Prerequisites:** Statistics Sequence restriction: Students who have completed any of these courses may not register: EN.550.310 OR EN.550.311 OR EN.560.435 OR EN.550.420 OR EN.550.430.

Instructor(s): L. Graham-Brady
Area: Engineering.

EN.560.404. Engineering Mechanics. 3.0 Credits.
This course will build a strong foundation in engineering mechanics, from fundamental theory to computational modeling. Constitutive relations governing various physical systems will be discussed, with a particular focus on constitutive symmetries and characteristic failure mechanisms corresponding to specific materials. Examples include ductile yielding and fracture in metals, shear banding in granular materials, fracture in composites, nonlinear inelasticity in biomaterials, and micro-buckling in architected materials. Finite element software will be used to model examples of these mechanisms. **Prerequisites:** EN.560.206 or permission of instructor

Instructor(s): J. Guest
Area: Engineering.

EN.560.423. Bridge Engineering. 3.0 Credits.
This course will explore bridge design and analysis by studying local bridges of various forms, materials, and load demands. Topics include an overview of the history of bridge engineering, an introduction to the AASHTO Standard Specifications for Highway Bridges, analysis techniques and load ratings, bridge details, and substructure design. **Prerequisites:** EN.560.320 AND EN.560.325

Instructor(s): R. Sangree
Area: Engineering.
EN.560.429. Preservation Engineering: Theory and Practice. 3.0 Credits.
The renovation of existing buildings often holds many advantages over new construction, including greater economy, improved sustainability, and the maintenance of engineering heritage and architectural character in our built environment. Yet, the renovation of existing structures presents many challenges to structural engineers. These challenges include structural materials that are no longer in widespread use (e.g., unreinforced masonry arches and vaults, cast iron, and wrought iron) as well as structural materials for which analysis and design practices have changed significantly over the last half-century (e.g., wood, steel, and reinforced concrete). This course will examine structures made of a wide variety of materials and instruct the student how to evaluate their condition, determine their existing capacity, and design repairs and/or reinforcement. The investigation and analysis procedures learned from this course may then be applied to create economical and durable structural alterations that allow for the reuse of older buildings. Site visits near Homewood campus will supplement lectures.
Prerequisites: EN.560.320 AND EN.560.325 or equivalent for graduate students.
Instructor(s): E. Meade; M. Farmer
Area: Engineering.

EN.560.431. Preservation Engineering II: Theory and Practice. 3.0 Credits.
Building on the content in Preservation Engineering I: Theory and Practice, this course will begin with materials introduced at the start of the Industrial Revolution--namely with the beginning of the use of iron materials as major structural elements within buildings. The course will continue with the introduction of cast iron, wrought iron, and finally, structural steel members. After introducing iron materials the course will continue with the early use of reinforced concrete as a major structural material. The course will discuss the historic structural analysis methods associated with such materials and contrast such methods with more modern analytical approaches. It will also discuss concrete deterioration and repair methods. Concepts related to masonry facade investigation and repair will be presented along with the analytical methods associated with thin-shell masonry construction from the 19th and 20th centuries. The course will conclude with a review of the assessment and retrofit of historic foundations. Course is co-listed with EN.565.431 and EN.560.631.
Prerequisites: EN.560.429 OR Permission from the instructor.
Instructor(s): E. Meade; M. Farmer
Area: Engineering.

EN.560.434. Structural Fire Engineering. 3.0 Credits.
This course will discuss the analysis and design of structures exposed to fire. It will cover the fundamentals of fire behavior, heat transfer, the effects of fire loading on materials and structural systems, and the principles and design methods for fire resistance design. Particular emphasis will be placed on the advanced modeling and computational tools for performance-based design. Applications of innovative methods for fire resistance design in large structural engineering projects, such as stadiums and tall buildings, will also be presented. Course is co-listed with graduate-level EN.560.635.
Instructor(s): T. Gernay
Area: Engineering.

EN.560.445. Advanced Structural Analysis. 3.0 Credits.
Matrix methods for the analysis of statistically indeterminate structures such as beams, plane and space trusses, and plane and space frames. Stiffness and flexibility methods. Linear elastic analysis and introduction to nonlinear analysis.
Prerequisites: EN.560.206
Instructor(s): J. Guest
Area: Engineering.

EN.560.451. Civil Engineering Design I. 2.0 Credits.
A study of the engineering design process from problem definition to the schematic or conceptual design. There are both individual and team projects which include written and oral presentations. Students’ understanding of and communication about the built environment is exercised with three languages -- Speech (written and verbal), Graphics (drawings and diagrams) and Mathematics (engineering calculations). First principles of mechanics and design procedures are connected with real world constructions and design concepts.
Instructor(s): J. Matteo
Area: Engineering.

EN.560.452. Civil Engineering Design II. 3.0 Credits.
A study of the engineering design process from conceptual to the final design. There are team projects which include written and oral presentations. A common project is defined for the class, however each group is allowed freedom to develop their designs independently, which typically demonstrates the great range of design solutions to a given problem. Work during the semester takes on a design studio approach, with team engineering and regular reviews and input from the instructor. In addition to engineering calculations, students produce a 3D digital model, engineering drawings, and presentation posters with written summary. The culmination of the semester is the final presentation of their design projects in an open forum of peers, professors, and representatives from the profession.
Instructor(s): J. Matteo
Area: Engineering.

EN.560.458. Natural Disaster Risk Modeling. 3.0 Credits.
This course will introduce the student to disaster risk modeling process, including: structure of catastrophe models and uses in loss estimation and mitigation, study and modeling of hazards (esp. hurricanes and earthquakes; also flood, landslide, and volcanic), vulnerability assessment including simulation of building damage, and estimation of post-disaster injuries and casualties. Additionally topics will include, exposure modeling (building typology distribution), introduction to disaster economic loss modeling, interpretation of risk metrics (return periods, PML, AAL, VaR, TVaR), their uncertainty, and applicability to management and financial decision making process and elements of present and future risk, such as, climate and exposure changes. Students will gain introductory experience in the use of GIS and simulation with Matlab.
Instructor(s): G. Pita
Area: Engineering.

EN.560.491. Civil Engineering Seminar I.
Seminar series of speakers on various aspects of civil engineering. Juniors and Seniors in Civil Engineering are expected to enroll in this sequence; juniors and seniors receive one-half credit. Different speakers are invited each semester. Satisfactory/Unsatisfactory only
Instructor(s): R. Sangree
Area: Engineering.
EN.560.492. Civil Engineering Seminar II. Seminar series of speakers on various aspects of civil engineering. Juniors and Seniors in Civil Engineering are expected to enroll in this sequence; juniors and seniors receive one-half credit. Different speakers are invited each semester. Satisfactory/ Unsatisfactory only
Prerequisites: EN.560.491
Instructor(s): R. Sangree
Area: Engineering.

EN.560.493. Civil Engineering Seminar III. Seminar series of speakers on various aspects of civil engineering. Juniors and Seniors in Civil Engineering are expected to enroll in this sequence; juniors and seniors receive one-half credit. Different speakers are invited each semester. Satisfactory/ Unsatisfactory only
Prerequisites: EN.560.492
Instructor(s): R. Sangree
Area: Engineering.

EN.560.494. Civil Engineering Seminar IV. Seminar series of speakers on various aspects of civil engineering. Juniors and Seniors in Civil Engineering are expected to enroll in this sequence; juniors and seniors receive one-half credit. Different speakers are invited each semester. Satisfactory/ Unsatisfactory only
Prerequisites: EN.560.493
Instructor(s): R. Sangree
Area: Engineering.

EN.560.501. Undergraduate Research. 0.0 - 3.0 Credits.
Research in Civil Engineering
Instructor(s): B. Schafer, J. Guest; M. Shields; R. Sangree; S. Siddiqui.

EN.560.511. Group Undergraduate Research. 0.0 - 3.0 Credits.
This section has a weekly research group meeting that students are expected to attend.
Instructor(s): B. Schafer, J. Guest; R. Sangree; S. Siddiqui.

EN.560.525. Independent Study. 1.0 - 3.0 Credits.
Instructor(s): J. Guest; R. Dalrymple; S. Siddiqui; T. Igusa.

EN.560.526. Independent Study - Civil Engineering. 0.0 - 3.0 Credits.
Instructor(s): B. Schafer, J. Guest; M. Shields; S. Siddiqui; T. Igusa.

EN.560.536. Research in Civil Engineering. 0.0 - 3.0 Credits.
Instructor(s): Staff.

EN.560.550. Civil Engineering Internship. 1.0 Credit.
Instructor(s): B. Schafer, J. Guest.

EN.560.557. Summer Research - Civil Engineering. 3.0 Credits.
Instructor(s): Staff.

EN.560.601. Applied Math for Engineers. 3.0 Credits.
This course presents a broad survey of the basic mathematical methods used in the solution of ordinary and partial differential equations: linear algebra, power series, Fourier series, separation of variables, integral transforms.
Instructor(s): M. Zhong
Area: Engineering, Quantitative and Mathematical Sciences.

EN.560.604. Introduction to Solid Mechanics. 3.0 Credits.
Basic solid mechanics for structural engineers. Stress, strain and constitutive laws. Linear elasticity and viscoelasticity. Introduction to nonlinear mechanics. Static, dynamic and thermal stresses. Specialization of theory to one- and two-dimensional cases: plane stress and plane strain, rods, and beams. Work and energy principles; variational formulations.
Instructor(s): S. Gaitanaros.

EN.560.608. Multilevel and Multiobjective Optimization in Systems. 3.0 Credits.
This course will introduce nonlinear optimization and convexity in higher dimensions to model large-scale systems. Graduate students only. Recommended Course Background: AS.110.201 or EN.553.291, AS.110.202.
Prerequisites: EN.560.442 OR EN.560.641
Instructor(s): S. Siddiqui
Area: Engineering.

EN.560.618. Probabilistic Methods in Civil Engineering and Mechanics. 3.0 Credits.
Covers probabilistic computational modeling in civil engineering and mechanics: Monte Carlo simulation, sampling methods and variance reduction techniques, simulation of stochastic processes and fields, and expansion methods. Applications to stochastic finite element, uncertainty quantification, reliability analysis, and model verification and validation.
Instructor(s): M. Shields.

EN.560.619. Advanced Structural Analysis. 3.0 Credits.
Matrix methods for the analysis of statistically indeterminate structures such as beams, plane and space trusses, and plane and space frames. Stiffness and flexibility methods. Linear elastic analysis and introduction to nonlinear analysis.
Instructor(s): J. Guest
Area: Engineering.

EN.560.623. Bridge Engineering. 3.0 Credits.
This course will explore bridge design and analysis by studying local bridges of various forms, materials, and load demands. Topics include an overview of the history of bridge engineering, an introduction to the AASHTO Standard Specifications for Highway Bridges, analysis techniques and load ratings, bridge details, and substructure design.
Instructor(s): R. Sangree
Area: Engineering.

EN.560.627. Topology Optimization for the Design of Materials, Devices, and Structures. 3.0 Credits.
Introduction to optimization theory and algorithms and their application to the design of structures, including structural systems, mechanisms, devices, and materials. Strong emphasis on topology optimization using finite element methods and design problems governed by solid and structural mechanics. Extensions to other physics and multiple physics are also introduced (e.g., fluids, heat transfer, optics, etc.). Course assumes familiarity with finite element methods and assumes no prior coursework in optimization.
Instructor(s): J. Guest
Area: Engineering.
EN.560.629. Preservation Engineering I: Theory and Practice. 3.0 Credits.
The renovation of existing buildings often holds many advantages over new construction, including greater economy, improved sustainability, and the maintenance of engineering heritage and architectural character in our built environment. Yet, the renovation of existing structures presents many challenges to structural engineers. These challenges include structural materials that are no longer in widespread use (e.g., unreinforced masonry arches and vaults, cast iron, and wrought iron) as well as structural materials for which analysis and design practices have changed significantly over the last half-century (e.g., wood, steel, and reinforced concrete). This course will examine structures made of a wide variety of materials and instruct the student how to evaluate their condition, determine their existing capacity, and design repairs and/or reinforcement. The investigation and analysis procedures learned from this course may then be applied to create economical and durable structural alterations that allow for the reuse of older buildings. Site visits near Homewood campus will supplement lectures. This course is co-listed with EN.565.628.
Instructor(s): E. Meade; M. Farmer
Area: Engineering.

EN.560.630. Structural Dynamics. 3.0 Credits.
Functional and computational examination of elastic and inelastic single degree of freedom systems with classical and non-classical damping subject to various input excitations including earthquakes. Extension to multi-degree of freedom systems with emphasis on modal analysis and numerical methods. Use of the principles of structural dynamics in earthquake response.
Instructor(s): C. Moen.

EN.560.631. Preservation Engineering II: Theory and Practice. 3.0 Credits.
Building on the content in Preservation Engineering I: Theory and Practice, this course will begin with materials introduced at the start of the Industrial Revolution—namely with the beginning of the use of iron materials as major structural elements within buildings. The course will continue with the introduction of cast iron, wrought iron, and finally, structural steel members. After introducing iron materials the course will continue with the early use of reinforced concrete as a major structural material. The course will discuss the historic structural analysis methods associated with such materials and contrast such methods with more modern analytical approaches. It will also discuss concrete deterioration and repair methods. Concepts related to masonry facade investigation and repair will be presented along with the analytical methods associated with thin-shell masonry construction from the 19th and 20th centuries. The course will conclude with a review of the assessment and retrofit of historic foundations. This course is co-listed with EN.560.431 and EN.565.431
Instructor(s): E. Meade
Area: Engineering.

EN.560.632. Structural Fire Engineering. 3.0 Credits.
This course will discuss the analysis and design of structures exposed to fire. It will cover the fundamentals of fire behavior, heat transfer, the effects of fire loading on materials and structural systems, and the principles and design methods for fire resistance design. Particular emphasis will be placed on the advanced modeling and computational tools for performance-based design. Applications of innovative methods for fire resistance design in large structural engineering projects, such as stadiums and tall buildings, will also be presented.
Instructor(s): T. Gernay
Area: Engineering
Writing Intensive.

EN.560.641. Equilibrium Models in Systems Engineering. 3.0 Credits.
Provide an introduction to equilibrium problems involving systems. The course will start with an introduction to optimization theory followed by various equilibrium problems including market, spatial, and network models. Solution techniques to these types of problems will be discussed, along with applications to systems engineering.
Instructor(s): S. Siddiqui
Area: Engineering.

EN.560.658. Natural Disaster Risk Modeling. 3.0 Credits.
This course will: • Introduce the student to disaster risk modeling process, including: - Structure of catastrophe models. Uses in loss estimation and mitigation. - Study and modeling of hazards (esp. hurricanes and earthquakes; also flood, landslide, and volcanic) - Vulnerability assessment: simulation of building damage, and estimation of post-disaster injuries and casualties. - Exposure modeling (building typology distribution). - Introduction to disaster economic loss modeling: - Interpretation of risk metrics (return periods, PML, AAL, VaR, TVaR), their uncertainty, and applicability to management and financial decision making process. - Elements of present and future risk: climate and exposure changes. - Student will gain introductory experience in the use of GIS and simulation with Matlab.
Instructor(s): G. Pita
Area: Engineering.

EN.560.667. Topology Optimization and Design for Additive Manufacturing. 3.0 Credits.
This course will discuss the computational design tool of topology optimization and its application to the design of "structures", including structural systems, complaint mechanisms, multifunctional devices, and material architectures. Particular emphasis will be placed on the emerging trend known as Design for Additive Manufacturing (AM), and the role of topology optimization in guiding the design of parts to be fabricated by AM processes (3D printing, Selective Laser Sintering, etc). The course will largely focus on design problems concerned with mechanical properties, with extensions to fluidic, thermal, optical, etc. properties also discussed. The course assumes some familiarity with finite element methods and assumes no prior coursework in optimization.
Instructor(s): J. Guest
Area: Engineering.

EN.560.692. Civil Engineering Graduate Seminar. 1.0 Credit.
Graduate students are expected to register for this course each semester. Both internal and outside speakers are included.

EN.560.699. Civil Engineering Graduate Seminar. 1.0 Credit.
Seminar series of speakers on various aspects of civil engineering. Different speakers are invited each semester. Full time civil engineering graduate students must enroll in the seminar course every semester unless excused by the Department.
Instructor(s): M. Shields.
EN.560.724. Cold-Formed Steel Structures. 3.0 Credits.
Practical introduction to the analysis, design, and experimentation
of cold-formed steel members and structures. Followed by an in-
depth treatment of the theories which underpin modern analytical and
computational tools used in exploring cold-formed steel behavior, and an
introduction to topics under current research.
Instructor(s): B. Schafer.

EN.560.730. Finite Element Methods. 3.0 Credits.
Variational methods and mathematical foundations, Direct and Iterative
solvers, 1-D Problems formulation and boundary conditions, Trusses,
2-D/3D Problems, Triangular elements, QUAD4 elements, Higher Order
Elements, Element Pathology, Improving Element Convergence, Dynamic
Problems.
Instructor(s): S. Ghosh.

EN.560.731. Structural Stability. 3.0 Credits.
Concepts of stability of equilibrium, stability criteria, work energy and
variational methods. Elastic buckling of columns, beams, frames, and
plates. Introduction to inelastic and dynamic buckling.
Instructor(s): B. Schafer.

EN.560.770. Advanced Finite Element Methods and Multi-Scale Methods.
3.0 Credits.
Addresses advanced topics in various areas of the finite element
methodology. Covers a range of topics, viz. element stability and
hourglass control, adaptive methods for linear and nonlinear problems,
mixed and hybrid element technology, eigen-value problems, multi-scale
modeling for composites and polycrystalline materials. Recommended
Course Background: EN.530.730 or EN.560.730
Instructor(s): S. Ghosh.

EN.570.351. Introduction to Fluid Mechanics. 3.0 Credits.
Topics include hydrostatics, ideal-fluid flow, laminar flow, turbulent flow.
Recommended Course Background: Statics, Dynamics, and AS.110.302
Prerequisites: Students must have completed Lab Safety training prior to
registering for this class.
Instructor(s): J. Kim
Area: Engineering, Natural Sciences.

Cross Listed Courses
Earth Planetary Sciences
AS.270.205. Introduction to Geographic Information Systems and
Geospatial Analysis. 3.0 Credits.
The course provides a broad introduction to the principles and practice
of Geographic Information Systems (GIS) and related tools of Geospatial
Analysis. Topics will include history of GIS, GIS data structures, data
acquisition and merging, database management, spatial analysis, and GIS
applications. In addition, students will get hands-on experience working
with GIS software.
Instructor(s): X. Chen
Area: Engineering, Natural Sciences.

Environmental Health and Engineering
EN.570.351. Introduction to Fluid Mechanics. 3.0 Credits.
Introduction to the use of the principles of continuity, momentum, and
energy to fluid motion. Topics include hydrostatics, ideal-fluid flow,
laminar flow, turbulent flow. Recommended Course Background: Statics,
Dynamics, and AS.110.302
Prerequisites: Students must have completed Lab Safety training prior to
registering for this class.
Instructor(s): J. Kim
Area: Engineering.

Computational Medicine
https://icm.jhu.edu/

Computational Medicine (CM) is an emerging discipline devoted to
the development of quantitative approaches for understanding the
mechanisms, diagnosis and treatment of human disease through
applications of mathematics, engineering and computational science.
The core approach of CM is to develop computional models of the
molecular biology, physiology, and anatomy of disease, and apply these
models to improve patient care. CM approaches can provide insight
into and across many areas of biology, including genetics, genomics,
molecular networks, cellular and tissue physiology, organ systems, and
whole body pharmacology.

CM research at ICM is sub-divided into four key areas: Computational
Molecular Medicine (https://icm.jhu.edu/research-areas-2/computational-
molecular-medicine); Computational Physiological Medicine
(http://icm.jhu.edu/research-areas-2/computational-physiological-
medicine); Computational Anatomy (http://icm.jhu.edu/research-
areas-2/computational-anatomy); Computational Healthcare (http://
icm.jhu.edu/research-areas-2/computational-healthcare). Techniques
for and applications in each of these four key subareas are introduced
during the required core courses, exposing students to the breadth
of Computational Medicine, and enabling each student to identify a
preferred area of interest:

- Computational Physiological Medicine develops mechanistic models
of biological systems in disease, and applies the insights gained
from these models to develop improved diagnostics and therapies.
Therapies could be diverse drugs, electrical stimulation, mechanical
support devices and more.
- Computational Molecular Medicine harnesses the enormous amount
of disease-relevant data produced by next-generation sequencing,
microarray and proteomic experiments of large patient cohorts,
using statistical models to identify the drivers of disease and the
susceptible links in disease networks.
• **Computational Anatomy** uses medical imaging to analyze the variation in structure of human organs in health and disease. Such image analysis has been integrated into clinical workflows to assist in the diagnosis and prognosis of complex diseases.

• **Computational Healthcare** is an emerging field devoted to understanding populations of patients and their interaction with all aspects of the healthcare process.

CM is distinct from Computational Biology in its focus on human health, disease, and treatment; translation to and application in the clinic is a near-term goal of all CM research. Applications of CM are as broad as medicine itself, and include: identification of optimal drugs using associated genomic and proteomic biomarkers; discovery of image-based biomarkers for diagnosis and prognosis; design and dynamic adjustment of individualized non-drug therapies such as deep brain stimulation, cardiac stimulation, and cochlear implants; modeling and learning from patient EHR data to improve patient outcomes and efficiency of care; optimization of healthcare policy decisions by quantitative analysis; and more. CM is one of the pillars of the University's Strategic Initiative in Individualized Health.

### Computational Medicine Minor

The Institute for Computational Medicine (ICM) is proud to offer an undergraduate minor in Computational Medicine, the **first educational program in CM**, reflecting Johns Hopkins University's leadership in this field. Like the ICM itself, the undergraduate minor in Computational Medicine is integrative and multidisciplinary. The 18 ICM Core Faculty who serve as advisors to the undergraduate minor hold primary and joint appointments in multiple Johns Hopkins University departments and schools including Biomedical Engineering, Computer Science, Electrical and Computer Engineering, Mechanical Engineering, Applied Mathematics and Statistics (WSE); Neurosurgery, Emergency Medicine, Medicine, and the Divisions of Cardiology and Health Sciences Informatics (SOM); and Health Policy and Management (BSPH).

With a minor in CM, undergraduates will have a solid grounding in the development and application of computational methods in multiple key areas of medicine. Specifically, undergraduates will understand how mathematical models can be constructed from biophysical laws or experimental data, and how predictions from these models facilitate diagnosis and treatment of a disease. Undergraduates will become conversant with a wide variety of statistical, deterministic and stochastic modeling methods, skills that are essential to the advancement of modern medicine, and are prized both in academic research and industrial research.

#### Minor Prerequisites

Before attempting the minor, undergraduates will have taken the following courses. For a course to count towards the minor, a minimum grade of C- is required (courses graded as 'S/U' do not satisfy prerequisites):

1. Calculus I
2. Calculus II
3. Probability and Statistics: either a single course covering both (e.g. EN.553.310 or EN.553.311) or a course devoted to each (e.g., EN.553.420 and EN.553.430) – this may be taken concurrent with core course EN.580.431
4. At least one (1) additional course in mathematics or applied mathematics (at least 3 credits)
5. At least one (1) of the following computer programming course (at least 3 credits): EN.500.112, EN.580.200, EN.601.120
6. At least one (1) biological sciences course at the 200 level or higher (at least 3 credits). AP Biology credits do not satisfy this requirement.

#### Core Courses

The required core courses for the minor are Introduction to Computational Medicine I (EN.580.431) and **one** of the following:

- Computational Molecular Medicine (EN.553.450) or Foundations of Computational Biology and Bioinformatics II (EN.580.488).

EN.580.431 covers computational anatomy and physiology and will be jointly taught by ICM faculty from multiple departments.

EN.550.450 focuses on molecular medicine and computational healthcare while EN.580.488 introduces probabilistic modeling and information theory applied to biological sequence analysis. Both courses require background in probability theory and statistics.

Core courses may not be taken concurrently.

#### Distinguished Seminar Series

Students enrolled in the Computational Medicine Minor are **REQUIRED** to attend 6 ICM Distinguished Seminars (https://icm.jhu.edu/seminar-series) in person by graduation. Documentation of seminar attendance is two-fold. For each seminar attended students must: (1) sign-in at the seminar and (2) complete an online Seminar Attendance Form (https://docs.google.com/forms/d/e/1FAIpQLSdBi2F2XW6bPTNVRzyg92EkfYs3xfkcM3hpndU868yiDnAzAoQ/viewform).

#### Elective Courses

Following satisfaction of the prerequisites, to complete the minor undergraduates must take at least 18 credits of CM courses. This includes two one-semester core courses plus approved elective courses selected from those listed below. The following restrictions are noted:

1. No more than 3 of the 18 elective credits may consist of independent research in computational medicine or approved CM-related research. Eligibility of independent research as “M”, “C”, “MC”, or neither is at the advisor’s discretion. Note: The Senior Design Project Course (EN.580.580/581) may count toward independent research, provided that the research falls within the field of computational medicine, as decided by the advisor;
2. The 18 credits will all be at 300-level or above, and courses must be passed at a C-level or above;
3. At least 1 non-core/elective courses must be outside student’s home department;
4. At least 2 non-core/elective courses must have a substantial biology or medicine component, as identified in the list below with an (M) designation;
5. At least 1 non-core course must have a significant component of “applied programming” (distinct from a course on computer language or on programming such as Intermediate Computer Programming in Computer Science) to satisfy the computational component, as identified in the list of electives with an “C” designation;
6. All courses must be passed at a C-level or above;
7. A class may not be counted as both a prerequisite and an elective.

Students may suggest elective courses to be added to the list by completing a "Class Approval Request Form". Requests should be made...
to Alecia Flynn (aflynn12@jhu.edu) and will be reviewed by the CM Minor Curriculum Committee.

### Electrical and Computer Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.315</td>
<td>Intro. to Bio-Inspired Processing of Audio-Visual Signals</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.432</td>
<td>Medical Imaging Systems (M)</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.601</td>
<td>Introduction to Linear Systems Theory</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.621</td>
<td>Introduction To Nonlinear Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.473</td>
<td>Magnetic Resonance in Medicine (MC)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Mechanical Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.343</td>
<td>Design and Analysis of Dynamical Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.676</td>
<td>Locomotion II: Dynamics (M)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Chemical and Biomolecular Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN.540.400</td>
<td>Project in Design: Pharmacokinetics (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.409</td>
<td>Dynamic Modeling and Control (C)</td>
<td>4</td>
</tr>
<tr>
<td>EN.540.421</td>
<td>Project in Design: Pharmacodynamics (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.540.638</td>
<td>Advanced Topics in Pharmacokinetics and Pharmacodynamics I (C)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Applied Mathematics and Statistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.391</td>
<td>Dynamical Systems</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.420</td>
<td>Introduction to Probability</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.426</td>
<td>Introduction to Stochastic Processes</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.430</td>
<td>Introduction to Statistics</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.436</td>
<td>Data Mining (C)</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.386</td>
<td>Scientific Computing: Differential Equations (C)</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.492</td>
<td>Mathematical Biology (C)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Biomedical Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.580.420</td>
<td>Build-a-Genome (M)</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.492</td>
<td>Build-a-Genome Mentor (M)</td>
<td>4</td>
</tr>
<tr>
<td>EN.580.430</td>
<td>Systems Pharmacology and Personalized Medicine (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.445</td>
<td>Networks (C)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.460</td>
<td>Theory of Cancer (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.462</td>
<td>Representations of Choice (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.468</td>
<td>The Art of Data Science (C)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.488</td>
<td>Foundations of Computational Biology and Bioinformatics II (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.491</td>
<td>Learning Theory (C)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.689</td>
<td>Computational Personal Genomics (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.694</td>
<td>Statistical Connectomics (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.446</td>
<td>Physical Epigenetics (M)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Computer Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.601.350</td>
<td>Introduction to Genomic Research (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.448</td>
<td>Computational Genomics: Data Analysis (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.447</td>
<td>Computational Genomics: Sequences (MC)</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.455</td>
<td>Computer Integrated Surgery I (C)</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.461</td>
<td>Computer Vision (C)</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.475</td>
<td>Machine Learning (C)</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.476</td>
<td>Machine Learning: Data to Models (C)</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.482</td>
<td>Machine Learning: Deep Learning</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.485</td>
<td>Probabilistic Models of the Visual Cortex (C)</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.723</td>
<td>Advanced Topics in Data-Intensive Computing (C)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Declaring the Minor

Interested students should contact Alecia Flynn, Sr. Academic Coordinator, to receive guidance on declaring the minor:

Phone: 410-516-6892
Email: aflynn12@jhu.edu

Specific questions regarding the minor requirements and courses can be directed to Dr. Joshua Vogelstein (jovo@jhu.edu), Director of Undergraduate Studies for the CM minor.

### BME MSE Computational Medicine (CM) Focus Area

The Department of Biomedical Engineering offers a Focus Area in Computational Medicine (BME MSE CM Focus Area) as part of its Masters of Science and Engineering program. The BME MSE CM Focus Area is a course-based degree program comprising two BME core competency courses, three CM focus area courses, three CM focus area electives, and at least two electives outside the program. In addition to these 10 courses, students are also required to complete the Distinguished Seminar Series in Computational Medicine course. Required CM courses and focus area electives are taught by core faculty (https://icm.jhu.edu/people/core-faculty) of the Institute for Computational Medicine (https://icm.jhu.edu).

### To Apply

Perspective students should apply to the MSE program in the Department of Biomedical Engineering (https://www.bme.jhu.edu/graduate/mse/apply), indicating an interest in Computational Medicine.

### BME MSE CM Focus Area Curriculum Requirements

#### Core Biomedical Engineering Competency

All BME Department MSE students are expected to complete two of the following courses:

- Systems Bioengineering 1 (EN.580.721)
- Systems Bioengineering 2 (EN.580.722)
- Systems Bioengineering 3 (EN.580.779)

#### Required CM Focus Area Courses

Two of the following courses:

- Introduction to Computational Medicine I (EN.580.631)
- Choose either:
  - Foundations of Computational Biology & Bioinformatics II (EN.580.688)
  - Computational Molecular Medicine (EN.553.650)

#### CM Focus Area Electives

CM students will complete additional electives selected from the following list (choose at least three of these courses):

- Principles of Complex Networked Systems (EN.520.622)
- Advanced Topics in Pharmacokinetics and Pharmacodynamics (EN.540.639)
- Introduction to Probability (EN.553.620)
- Introduction to Stochastic Processes (EN.553.426/626)
- Modeling, Simulation, and Monte Carlo (EN.553.664)
- Models of the Neuron (EN.580.639)
Computational Medicine

- Systems Pharmacology & Personalized Medicine (EN.580.640)
- Precision Care Design I & II (EN.580.670/671)
- Computational Stem Cell Biology (EN.580.647)
- Neuro Data Design (EN.580.697/698)
- Practical Ethics for Future Leaders (EN 580.496)
- Advanced Topics in Genomic Data Analysis (EN.601.641)
- Computational Genomics: Data Analysis (EN.601.638)
- Machine Learning (EN.601.675)
- Machine Learning: Data to Models (EN.601.676)

Additional Electives
Students will select additional graduate level science, technology, engineering, or math courses with the consent of their advisor to complete the total of 10 full courses required for graduation.

The Pre-Doctoral Training Program in Computational Medicine

The Pre-Doctoral Training Program in Computational Medicine, funded by the National Institute of General Medical Sciences, supports selected trainees from the departments of Biomedical Engineering and Applied Mathematics & Statistics.

Students chosen for this Ruth L. Kirschstein National Research Service Award institutional training grant will learn through a combination of focused coursework and dissertation research alongside computational medicine training program faculty mentors from across the Johns Hopkins Whiting School of Engineering and the School of Medicine. The program is designed to prepare graduates to fill the growing need for researchers trained in computational medicine in both industry and academia.

Trainees will be part of an exceptional and distinctive community of students and faculty exploring the possibilities of computational medicine. Trainees will learn how to develop models of biological systems in health and disease, constrain these models using data collected from patients, and apply models to deliver improved diagnoses and therapies.

To Apply
Prospective trainees should apply to the PhD programs of the Departments of Biomedical Engineering (https://www.bme.jhu.edu/graduate/phd/apply) or Applied Mathematics and Statistics (https://engineering.jhu.edu/ams/graduate-studies/admissions-criteria-admission-process), indicating an interest in pursuing pre-doctoral training in Computational Medicine.

Program Milestones

Year One
By the end of the first year, trainees will complete the following:

- Introduction to Computational Medicine I (EN.580.631)
- Foundations of Computational Biology & Bioinformatics II (EN.580.688) or Computational Molecular Medicine (EN.553.650)
- Required home department course work
- At least one CM research rotation in a laboratory of participating Program Faculty

Year Two
By the end of the second year, trainees will complete:

- One clinical rotation in the laboratory of a clinician-researcher who works with patient data

Year Three and Beyond

- Graduate Board Oral (GBO) examination

Additional Requirements
Each year in the program, trainees will attend the CM Journal Club, the Distinguished Seminars in Computational Medicine, and the annual ICM Retreat.

Faculty

Director
Raimond Winslow
Director of The Institute for Computational Medicine, Director of The Pre-Doctoral Training Program in Computational Medicine, Raj and Neera Singh Professor of Biomedical Engineering

Associate Director, Institute for Computational Medicine
Sridevi Sarma
Associate Professor, Dept. of Biomedical Engineering

Co-Director, Pre-Doctoral Training Program
Feilim Mac Gabhann
Associate Professor, Dept. of Biomedical Engineering

Core Faculty

William S. Anderson
Associate Professor, Dept. of Neurosurgery, Attending Neurosurgeon at The Johns Hopkins Hospital

Joel Bader
Professor, Dept. of Biomedical Engineering, Bioinformatics and Computational Biology Lab

Patrick Boyle
Assistant Research Professor, Dept. of Biomedical Engineering

Nicolas Charon
Assistant Professor, Dept. of Applied Mathematics and Statistics, Center for Imaging Sciences

Nathan Crone
Professor, Dept. of Neurology

Donald Geman
Professor, Applied Mathematics and Statistics, Center for Imaging Sciences

Rachel Karchin
Associate Professor, Dept. of Biomedical Engineering, The William R. Brody Faculty Scholar

Michael I. Miller
Herschel and Ruth Seder Professor, Dept of Biomedical Engineering, Director of Center for Imaging Sciences

Rajat Mittal
Professor, Dept. of Mechanical Engineering

Tilak Ratnanather
Associate Research Professor, Dept. of Biomedical Engineering
Informatics, wide range of fields and disciplines such as robotics, medical and health or administration, and information security. Application areas span a conjunction with other areas. Core CS careers include (but are not limited it as a unique area. CS can be viewed as a stand-alone discipline worthy computer science.

At the center of this revolution, making it happen, are those who study now operate. Information, and its associated processing and transport, is technology-driven restructuring of the way society and most professions now operate. Information, and its associated processing and transport, is the commodity upon which corporations are built and lives are improved. At the center of this revolution, making it happen, are those who study computer science.

There are two dimensions to the field of computer science that establish it as a unique area. CS can be viewed as a stand-alone discipline worthy of study unto itself, and/or as an empowering discipline to be studied in conjunction with other areas. Core CS careers include (but are not limited to) software design and development, computer systems engineering or administration, and information security. Application areas span a wide range of fields and disciplines such as robotics, medical and health informatics, scientific research, data analytics, entrepreneurship, gaming/entertainment, and business computing to name a few.

Because computer science is a highly diverse and broadly applied field, studies can proceed in many different directions. Accordingly, the undergraduate and graduate programs in the Department of Computer Science at Johns Hopkins are flexible curricula designed to accommodate a wide range of goals. A student at Johns Hopkins can pursue appropriately customized versions of the following computer science programs: minor, bachelor of science, bachelor of arts, masters of science in engineering, and doctor of philosophy. Most of this catalog section is devoted to details regarding these programs.

Computer science research laboratories are currently active in the following areas at Hopkins: algorithm design and analysis, human-computer interaction, machine learning, data intensive computing, health informatics, computational medicine, computer vision and image processing, computer graphics, geometric modeling, programming languages, natural language and speech processing, information retrieval, cryptography and information security, secure and robust systems, storage systems, high-performance and scientific computing, computational genomics, networks and distributed systems, stream processing, parallel and distributed databases, robotics, and computer-integrated surgical systems.

Additionally, interdisciplinary research centers in the university have heavy involvement by Computer Science faculty: the Information Security Institute (ISI), the Center for Computer-Integrated Surgical Systems and Technology (CISST), the Laboratory for Computational Sensing and Robotics (LCSR), the Center for Language and Speech Processing (CLSP), the Institute for Data Intensive Engineering and Science (IDIES), the Institute for Computational Medicine (ICM), and the Malone Center for Engineering in Healthcare (MCEH). An important component of the educational process in the department is the opportunity for undergraduate and graduate student participation in the research programs of the faculty. In particular, original research in close association with individual faculty members is emphasized at the graduate level.

There are several closely related programs at the undergraduate and graduate levels which involve significant coursework and faculty involvement from the Department of Computer Science. The Laboratory for Computational Sensing and Robotics (LCSR) offers a minor in robotics and also a minor in computer integrated surgery through the Engineering Research Center for Computer Integrated Surgical Systems and Technology. Details of these programs may be found elsewhere in this catalog in the section pertaining to the Laboratory for Computational Sensing and Robotics (p. 960). Undergraduates with a strong interest in system design and performance may elect to pursue a bachelor degree in computer engineering (p. 854). This field of study includes course work in computer science, as well as electrical and computer engineering. Although jointly administered by both departments, specific goals and requirements of the computer engineering degree may be found in the catalog section pertaining to the Department of Electrical and Computer Engineering only.

At the graduate level, the LCSR (p. 960) offers a Master of Science in Engineering (M.S.E.) in Robotics, designed for students from a wide variety of engineering, scientific, and mathematical backgrounds to advance their interdisciplinary knowledge in robotics. Details of this program may be found in the LCSR section of this catalog, or on the web at www.lcsr.jhu.edu/MSE. Lastly, the Master of Science in Security Informatics (M.S.S.I.) is a specialized graduate program offered through the Information Security Institute (p. 903) (ISI) in the WSE. The field of security informatics is fundamentally based on information security and assurance technologies (hardware, software, and networks) as related to issues such as policy, management, privacy/trust, health care, and law, from both national and international perspectives. Interested students can obtain detailed information regarding the M.S.S.I. online at https://isi.jhu.edu or in the ISI section of this catalog.

For additional information regarding the academic programs available in Computer Science, and the facilities provided, please consult the sections which follow, or the departmental website www.cs.jhu.edu.

**Facilities**

The CS department is primarily housed in Malone Hall, a state of the art, open concept research facility. Additional department research space is located in the adjacent Hackerman Hall.

The general department computing facilities include numerous workstations and servers. Two undergraduate laboratories combine to provide approximately 24 Linux workstations. One of these is a collaboration room allowing students to work in a team-based environment, with several private breakout rooms as well. At the graduate level there is a Master's Lab consisting of a collaboration area and workstation area, both consisting of several Linux workstations.
All Ph.D. students are assigned dedicated desks in their research labs. Additionally, multiple high-speed networked laser printers, as well as a networked color copier and remotely accessible Linux compute servers are available to both graduate and undergraduate students.

Focused research laboratories have significant resources that provide greater specialization, including isolated networks of PCs for security studies, high-performance computing clusters, robots and computer vision systems, a mock operating room equipped with medical robots and imaging equipment, and more.

The general department computing facilities are tied together by our own LAN, and access to specialized hardware in other departments, labs, and institutions is available via the university intranet and the Internet. In addition, the university provides wireless access to the JHU intranet and the Internet, as well as server systems that provide e-mail accounts for all students.

Undergraduate Programs

(See also General Requirements for Departmental Majors (p. 7))

The objectives of our bachelor degree programs are to train computer scientists who will be able to:

- Successfully engage in professional practice in the computing sciences or apply computer science tools and techniques to another field of interest.
- Pursue advanced study in the computing sciences.
- Work successfully in both independent and team environments.
- Lead teams and provide vision for innovation.
- Behave in a professional and ethical manner.

A successful major program of study leads to either the Bachelor of Science in Computer Science (B.S.) or the Bachelor of Arts in Computer Science (B.A.). Students should decide which degree program to complete by about their junior year. Both degree programs require specific courses and/or credits in several key areas: computer science, math, basic science, humanities and social sciences. However, there is much flexibility in how these requirements are fulfilled. Undergraduate majors may choose to pursue a broad selection of computer science and distributional courses, or to pursue a particular focus area within the field. Current foci primarily reflect departmental and school research strengths: big data, computational biology, fundamentals of computing, information security, natural language processing, robotics, systems and networking; while a few are directed towards career paths: software engineering, entrepreneurship/business computing, and video game design. Further information on these focus areas may be found in the computer science undergraduate advising manual (http://www.cs.jhu.edu/undergraduate-studies/academics/ugrad-advising-manual).

Details and course recommendations for these distributional requirements are below. These requirements add up to 100 credits and fulfill general university and WSE requirements, leaving 26 pure elective credits. Except for electives, courses should not be taken on an S/U basis. By university policy, no more than 18 D- credits can be counted toward the total credit requirements for a degree. The Courses and Curriculum Planning section (https://www.cs.jhu.edu/course-info) of the departmental website has lists of course area designations (Analysis, Applications, Systems), approved science courses, and courses approved as “CS other.”

Computer Science (42 credits)

The following foundational courses in computer science must be included in a student’s program.
EN.601.104  Computer Ethics (or Practical Ethics for Future Leaders which does not count towards CS credits)  1
EN.601.107  Introductory Programming in Java (or equivalent) or EN.500.112 Gateway Computing  3
EN.601.220  Intermediate Programming  4
EN.601.226  Data Structures  4
EN.601.229  Computer System Fundamentals  3
EN.601.231  Automata & Computation Theory  3
EN.601.433  Intro Algorithms  3

At least 16 credit hours must be at the 300-level or above, including EN.601.433. At least one course in each classification area of Analysis, Applications and Systems must be chosen. An exhaustive list of the area classifications for each of our courses may be found on the department's website.

Students must take at least one of the following courses which contain oral communication components. The course satisfying the oral requirement may overlap other requirements.
EN.601.255  Introduction to Video Game Design  3
EN.601.290  User Interfaces and Mobile Applications  3
EN.601.310  Software for Resilient Communities  3
EN.601.355  Video Game Design Project  3
EN.601.411  Computer Science Innovation & Entrepreneurship I  3
EN.601.421  Object Oriented Software Engineering  3
EN.601.447  Computational Genomics: Sequences (taken 2017 or later)  3
EN.601.456  Computer Integrated Surgery II  3
EN.601.520  Senior Honors Thesis  3
EN.580.437  Neuro Data Design I (counts as "CS other")  4
EN.580.438  Neuro Data Design II (counts as "CS other")  4

Eight additional credits of Computer Science are required. ** 8

Mathematics (24 credits)
The following courses or equivalent substitutes such as AP credit must be included:
AS.110.108  Calculus I  4
AS.110.109  Calculus II (For Physical Sciences and Engineering)  4
EN.553.171  Discrete Mathematics  4

The remaining courses must be 200-level or above, chosen from Mathematics (AS.110.xxx) or Applied Math and Statistics (EN.553.xxx), and must include coverage of both probability and statistics. Note that students will need at least six courses to fulfill the credit requirement. Some highly recommended math electives are: ***
AS.110.201  Linear Algebra  4
EN.553.420  Introduction to Probability  4
EN.553.430  Introduction to Statistics  4

Basic Sciences (16 credits)
At least two semesters of physics or two semesters of chemistry, with the associated laboratories, must be included. The remaining courses must be chosen in accordance with the list posted on the department's website, which includes most 'N' (natural science) designated courses in the Sciences and Engineering, but not all. At most 2 credits from S/U intersession courses may be used to fulfill this requirement.

Humanities/Social Sciences (18 credits)

As per WSE requirements, six courses in the Humanities and Social and Behavioral Sciences must be taken, with each course at least 3 credits.**** These courses must have either Humanities ('H') or Social and Behavioral Sciences ('S') area (or both) designators on them. Foreign language courses (without an 'H' or 'S') may also be used to satisfy this requirement.

Writing Requirement
Students are required to fulfill the university's requirement of two writing intensive courses, each at least 3 credits. Students must receive at least a C- grade or better in these writing courses. At least one course must be explicitly focused on writing skills in English (eg, Expository Writing, Professional Communication, Fiction & Poetry). These courses may overlap other requirements.

Electives
Electives are to be chosen by the student with guidance and approval of his/her advisor.

* No more than 6 independent type credits (courses numbered 601.5xx) and no more than 3 credits of short courses (1-credit special topics courses) can be counted toward this requirement. However, B.S. students doing the Senior Honors Thesis (EN.601.519-EN.601.520) may use an additional three credits of independent work toward their CS requirements, for a total of 9 credits.

No courses with grades below C- or with S/U grades can be used to fulfill this requirement unless they are not offered for a grade. At most 4 S/U credits may be applied towards this requirement.

** Up to 6 of the 42 required credits may be from an approved list of relevant courses in other departments, which includes courses cross-listed in CS. These courses may only count as "CS other" credits, not upper level CS credits (regardless of course level in the other department). See department website for the list.

*** AP Statistics credits may not be used to satisfy these credit requirements; however, they do meet the need for coverage of statistics (not probability).

**** See the Distribution tab in the Requirements for a Bachelor's Degree (http://e-catalog.jhu.edu/undergrad-students/academic-policies/requirements-for-a-bachelors-degree) section for two exceptions to the rule that each H/S distribution course be at least 3 credits.

Requirements for the B.A. Degree
To meet the course credit requirements for the B.A. in computer science, the student must complete a minimum of 120 credits. The basic requirements for the B.A. degree are:

Computer Science  32
Mathematics  20
Basic Sciences  12
Humanities/Social Sciences  18
Foreign Language  6

4 Writing Intensive Courses
Electives  32

Total Credits  120

Details and course recommendations of these distributional requirements are below. These requirements add up to 88 credits and fulfill general university distribution requirements. Except for electives, courses should
not be taken on a S/U basis. By university policy, no more than 18 D or D+ credits can be counted toward the total credit requirements for a degree.

**Computer Science (32 credits)**

The following foundational courses in computer science must be included in a student's program:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN.601.107</td>
<td>Introductory Programming in Java (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>or EN.500.112</td>
<td>Gateway Computing</td>
<td></td>
</tr>
<tr>
<td>EN.601.220</td>
<td>Intermediate Programming</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.226</td>
<td>Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.229</td>
<td>Computer System Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.231</td>
<td>Automata &amp; Computation Theory</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.433</td>
<td>Intro Algorithms</td>
<td>3</td>
</tr>
</tbody>
</table>

At least 15 credit hours must be at the 300-level or above, including EN.600.433.

**Mathematics (20 credits)**

The following courses must be included:

<table>
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</tr>
</thead>
<tbody>
<tr>
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<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.171</td>
<td>Discrete Mathematics</td>
<td>4</td>
</tr>
</tbody>
</table>

The remaining courses may be chosen from Mathematics (110.xxx) or Applied Math and Statistics (553.xxx). At least one course must be 200-level or above. Strongly recommended: Linear Algebra, Probability & Statistics. Note that at least five courses will be needed to fulfill this requirement.

**Basic Sciences (12 credits)**

At least two semesters of physics or chemistry or a combination of both, with the associated laboratories, must be included. The remaining courses must be chosen in accordance with the list posted on the department website, which includes most 'N' designated courses in the Sciences and Engineering, but not all. At most 2 credits from (S/U) intersession courses may be used to fulfill this requirement.

**Humanities/Social Sciences (18 credits)**

Six courses in the Humanities/Social Sciences must be taken, with each course at least 3 credits. ** At least two 3-credit courses at the 300-level or above are required. As befits a B.A. degree, students have ample flexibility to choose courses that broaden the scope of their study, in consultation with their advisors. A subset of the courses selected to satisfy this requirement should demonstrate coherence within an area. Any course with Humanities or Social Sciences area designators may fulfill these distributional requirements.

**Foreign Language (6 credits)**

At least 6 credits in one foreign language or demonstrated proficiency at the intermediate level are required. These foreign language credits are in addition to the 18 required Humanities/Social Sciences credits.

**Writing Requirement**

All primary computer science majors pursuing a B.A. degree are required to fulfill the university's requirement of four writing intensive courses, each at least 3 credits. At least one course must be explicitly focused on writing skills in English (e.g., Expository Writing, Professional Communication, Fiction & Poetry). Students must receive at least a C- grade in these courses. These courses may overlap other requirement areas.

**Electives**

Electives are to be chosen by the student with guidance and approval of his/her advisor.

| Total Credits | 120 |

**Minor in Computer Science**

To satisfy the course credit requirements for a minor in computer science, a student must take a minimum of seven courses, with a total of at least 23 credits, earning at least a C- in each course. These must include four core courses, to provide the student with a foundation, and three upper-level courses (300-level and above), to allow the student to pursue an advanced area in depth. Short courses cannot be used toward the minor requirements. All courses must be taken for a grade, not S/U.

While not explicitly required, we also strongly recommend taking EN.553.171 Discrete Mathematics as preparation for several computer science courses, including EN.601.231 Automata & Computation Theory and EN.601.433 Intro Algorithms. However, Discrete Mathematics does not count toward the minor course requirements.

**Core Courses**

<table>
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<td>Intermediate Programming</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.226</td>
<td>Data Structures</td>
<td>4</td>
</tr>
</tbody>
</table>

Choose one of the following:

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>EN.601.229</td>
<td>Computer System Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.231</td>
<td>Automata &amp; Computation Theory</td>
<td></td>
</tr>
</tbody>
</table>

**Upper-Level Courses**

Minors must take three CS courses (EN.601.xxx) at the 300-level or above. These courses should be chosen to form a cohesive minor and must be accepted by the computer science minor advisor. It is strongly recommended that students choose all three courses from within one of the three research areas of analysis, applications, or systems.

| Total Credits | 23 |

* Each upper-level course description in this catalog includes its area for reference. In addition, a current listing of courses with area designators is provided on the departmental website. Some upper level courses have math pre-requisites as well (Probability/Statistics or Linear Algebra most commonly), so plan ahead.

Students whose primary major is in the Whiting School may use the same courses to satisfy the requirements of the primary major and also those
of a computer science minor. Students who plan to fulfill requirements for a minor must go to the Department of Computer Science director of undergraduate studies to declare the minor and be advised on course selections, and inform the Office of Academic Advising by the end of their junior year.

**Short Courses**
The Department of Computer Science offers 1-credit short courses covering a variety of topics in computer science and engineering. The purpose of the short courses is to expose students to topics of current interest in the field of computer science and engineering. Short courses are taught not only by faculty and graduate students in the Department of Computer Science and visiting faculty from other universities, but by individuals from local government or industry who have demonstrable expertise in a given area and are practicing the application of computer science theory and concepts.

Students should be aware that short course offerings are likely to change from year to year, depending on instructor commitments: there is no guarantee that the same course will be available at a later time. Students interested in getting details about a particular short course can contact the instructor through the departmental office. No more than 3 credits of short courses may be applied toward the computer science course credit requirement for the B.S. or the B.A. degrees.

**Double Majors with Computer Science**
It is possible for students to pursue a double major program in which one of the majors is computer science. The computer science requirements are flexible enough to allow for combination with most majors in the Whiting School of Engineering and the Krieger School of Arts and Sciences. Whether computer science is your primary or secondary major, you will be assigned a faculty advisor in the department. In order to declare a first or second major in computer science, students should see the Director of Undergraduate Studies before the start of senior year. Those students must also inform the Office of Academic Affairs of the Whiting School of Engineering and the Registrar of their double major status. Subject to restrictions set by the department offering a second major, students whose primary major is in the Whiting School may use courses to satisfy both the requirements of the student's primary major and those of a double major.

**Combined Bachelor's/Master's Program**
As early as the end of their sophomore year, qualified students may apply for admission to a combined bachelor's/master's program which combines a B.S. or B.A. degree (in any department) with a master of science in engineering degree in Computer Science. This program allows students to simultaneously pursue both an undergraduate and a graduate degree program of study. Generally, the combined B.S./M.S.E. or B.A./M.S.E. program is accomplished in five years, although some students take more or less time. Applicants are judged on the basis of their performance in courses and their letters of recommendation. Double counting of at most two courses is subject to current WSE and departmental policies. Students may not take a 601.3xx course as an undergraduate and the corresponding 601.4xx course for the M.S.E.; likewise for 601.4xx/6xx course offerings. Upon admission to the program students will be assigned a graduate faculty advisor in the Computer Science Department who must approve the courses to be applied toward the master’s degree. For information on the requirements of the M.S.E. degree, see the Graduate Programs tab on this page, or ask in the departmental office for the document that lists those requirements.

**Graduate Programs**
Every graduate student in the Department of Computer Science must follow a program approved by a faculty advisor in the department. The advisor assigned to a student may change, subject to the acceptance of the new advisor.

**Requirements for the M.S.E. Degree**
The Master of Science in Engineering (M.S.E.) is a daytime in-person program offered by the Department of Computer Science. Most students complete the program in three full-time semesters. Two semesters of residence as a full-time graduate student are required. Those interested in part-time evening/remote study should refer to Engineering for Professionals Program at ep.jhu.edu.

Entering students are expected to have completed a program of study equivalent to that required by the B.S. in computer science. Applicants from other disciplines are expected to have coursework (or equivalent experience) in intermediate programming (C++ and Java), data structures, computer system fundamentals, and automata theory. Upon admission to the Master of Science in Engineering program, a student is assigned a graduate advisor from the Department of Computer Science who must approve the courses to be applied to the M.S.E. degree.

The Department of Computer Science classifies its courses into three sub-areas: Analysis, Applications, and Systems. All M.S.E. candidates must complete at least two courses (3 class hours (credits) each) from each of these three areas. Each upper-level course description in this catalog includes its area for reference. A course in multiple areas may only be counted toward one requirement. A current listing of courses with area designators (http://cs.jhu.edu/courses/courseareas.pdf) is provided on the departmental website. While this listing includes a few highly relevant courses outside the Department of Computer Science, only one such course may be applied toward the area requirements. M.S.E. students must also complete an additional two elective courses (chosen from any CS area or from closely related departments such as Electrical and Computer Engineering, Cognitive Science, Mathematics, or Applied Mathematics and Statistics) approved by the advisor, for a total of eight graduate-level courses.

In addition to the eight courses, a student must elect one of the following options in order to fulfill the degree requirements:

- Two additional (graduate-level) courses in Computer Science, approved by the advisor as above.
- A supervised research project including an approved project report that will be made publicly available.
- An original, faculty-approved master’s essay, submitted to the Milton S. Eisenhower Library.

By satisfying the Ph.D. qualifying course requirements and the first qualifying project, a student will also satisfy the M.S.E. degree requirements (unless more than two course requirements have been satisfied using courses transferred from other institutions). Please refer to the Ph.D. program information for details.

All M.S.E. degree candidates are encouraged to regularly attend the department seminars.

**Course Requirement Details**
- All courses counted toward the M.S.E. degree requirement must be taken at a graduate-appropriate level. In the Department of Computer Science, this includes courses that are 600-level and above, as well as...
400-level courses for students in the combined BS/MSE program who have not yet switched to graduate status.

- At most, two courses with grades less than B- may be counted toward the coursework requirements. No courses with grades less than C- may be counted.
- The overall grade point average of the courses counted toward the coursework requirements must be a 3.0 or higher (B average).
- At most, two independent study courses can be counted toward the course requirements.
- Other than independent study courses, no courses with grades of P or S can be counted toward the coursework requirement. Courses with grades of P or S will not be included in the grade point average calculation.
- One of the courses required for the M.S.E. degree, but only one, can be replaced by 3 credits from comparable short courses.
- A majority of the courses counted toward the degree must be taught in the Department of Computer Science.
- At most, two courses can be transferred from graduate programs of other institutions to be counted toward the degree requirements. Such transfer courses must be approved by the student’s faculty advisor and the department. It is the obligation of the student to provide all necessary data to the Department of Computer Science regarding the course(s) for which transfer credit is being requested.
- Students in the combined BS/MSE program may transfer up to two graduate-qualified courses which also are counted toward the undergraduate degree, as well as any other graduate-qualified courses taken while an undergraduate which are not counted toward the undergraduate degree.
- A grade of D or F can result in probation; a second D or F is cause for being dropped from the program.
- Every student must successfully pass Academic Ethics (EN.500.603).
- Any master's student engaged in research for payment or to help meet degree requirements is required to complete Responsible Conduct of Research training. Students receiving payment from NIH training grants or fellowships must take the in person course – AS.360.625 Responsible Conduct of Research. All other students can take the course online – AS.360.624 Responsible Conduct of Research (Online). Instructions for accessing and signing up for the course can be found here: http://engineering.jhu.edu/wse-research/resources-policies-forms/responsible-conduct-of-research/ online-training-course-for-the-responsible-conduct-of-research/ Additional information regarding this training can be found here: http://eng.jhu.edu/wse/page/conduct-of-research-training. Students who are required to complete this training will not receive a diploma until the course has been completed.

**Tuition Support**

M.S.E. students are not normally eligible for tuition waivers, but will be able to work on campus up to 19.99 hours per week for hourly rates if they find campus employment (see the Office of Student Employment for open positions). There are also course assistant positions available for qualified students who are seeking financial support. Those interested must apply at the start of each semester for specific courses in need.

**Requirements for the Ph.D. Degree**

The goal of the Doctor of Philosophy (Ph.D.) program in the Department of Computer Science is to prepare first-rate scholars in the analysis, systems, and applications areas of computer science. Successful graduates may assume significant positions in academia, research institutes, industry, or government laboratories.

Applications for admission to the Ph.D. program in Computer Science are reviewed by a faculty committee. Although the specific criteria are not rigid, all students admitted will exhibit exceptional intellectual achievements and promise. Applicants must submit letters of recommendation, GRE scores, and (for international applicants) TOEFL/IELTS scores. Visit grad.jhu.edu for more information on the application process.

In keeping with Hopkins’ traditions, program requirements are flexible, as described below. For more detailed policies regarding the Ph.D program, please visit the Advising Manual (http://www.cs.jhu.edu/graduate-studies/phd-requirements) on our departmental website.

**University Residency**

Two consecutive semesters of residence as a full-time graduate student are required.

**Seminar Attendance**

All Ph.D. degree candidates are required to enroll and maintain satisfactory attendance in Computer Science Seminar EN.601.801 each semester for the duration of their enrollment in the program. Although seminar attendance is required, the seminar may not be counted toward the qualifying course requirement.

**Responsible Conduct of Research and Academic Ethics**

All doctoral students are required to take AS.360.625 Responsible Conduct of Research. Students are expected to complete the course by the end of the first year but have until the start of the fourth semester to meet this requirement. Failure to do so may result in a loss of funding. Additional information regarding this requirement can be found here: Conduct of Research (https://engineering.jhu.edu/wse-research/resources-policies-forms/responsible-conduct-of-research). In addition, all doctoral students must complete the course Academic Ethics (EN.500.603).

**Qualifying Course Requirements**

The Department of Computer Science classifies its courses into three research areas: analysis, applications, and systems. All Ph.D. candidates must complete at least two courses (3 class hours each) from each of these three areas. Each upper-level course description in this catalog includes its area for reference. A course in multiple areas may only be counted toward one requirement. A current listing of courses with area designators (http://cs.jhu.edu/courses/courseareas.pdf) is provided on the departmental website. While this listing includes a few highly relevant courses outside the Department of Computer Science, only one such course may be applied toward the area requirements. Ph.D. students must also complete an additional two elective graduate courses (chosen from any CS area or from closely related departments such as Electrical and Computer Engineering, Cognitive Science, Mathematics, or Applied Mathematics and Statistics) for a total of eight courses. Computer Science graduate students may count 600-level and above graduate courses. The coursework program must be approved by the student’s faculty advisor. The overall grade point average for these eight courses must be at least equivalent to a B+. No course with a grade of less than C- may be counted toward this Ph.D. qualifying course requirement. Other than independent study courses, no courses with grades of P or S can be counted toward the coursework requirement. Courses with grades of P or S will not be included in the grade point average calculation. One of the courses required for the degree, but only one, may be replaced by 3 credits from comparable short courses.
With approval of the student's faculty advisor, up to two courses can be transferred from graduate programs of other institutions; more than two such courses can be transferred with approval of the department. It is the obligation of the student to provide all necessary data to the Department of Computer Science regarding the course(s) for which transfer credit is being requested. Students are expected to complete the course requirements by the end of their second year as a Ph.D. candidate.

Qualifying Project Requirements
A Ph.D. student must complete two projects, each under the supervision and with the written agreement of a different faculty member in the Department of Computer Science. Upon conclusion of each project, the student must write a "Project Report" describing the project in detail. This report will be a public document and will be kept on file in the department office. The supervising faculty member must approve the project report. Students are expected to complete the qualifying projects by the end of their third year as a Ph.D. candidate.

Upon completion of the Ph.D. qualifying course requirements and the first qualifying project, students are ordinarily eligible to receive a master of science in engineering degree. The degree will be awarded upon student request.

Graduate Board Oral Examination (GBO)
This examination is a university requirement, ideally taken in the student's third year. The oral exam is administered by a panel consisting of the research sponsor, two faculty members from the Department of Computer Science, and two from outside the department. The exam seeks to establish the student's readiness to conduct original research in the area of his or her "Preliminary Research Proposal," which should be distributed to the examiners in advance and presented by the student at the start of the exam.

Part-Time Ph.D.
Two consecutive semesters of residence as a full-time graduate student are required by the university. Attempting to obtain a Ph.D. is a major commitment and involves close coordination with a faculty advisor in the department. Part-time students must be able to establish and maintain these close links, therefore part-time study is by advanced permission only.

Departmental Seminar
Ph.D. students must give an official departmental seminar on their research area. This is to be done after the GBO and prior to the dissertation defense, or as part of the dissertation defense.

Dissertation and Defense
Ph.D. students must write a dissertation consisting of original research in their chosen area. They must deliver a public presentation of the dissertation before a dissertation committee consisting of the faculty advisor, a second faculty member in the Department of Computer Science (who must have a primary tenure-track appointment in the Department if the advisor does not), and one or more other members with Ph.D. degrees. In conformity with University requirements, the members of the dissertation committee must submit a referee's letter to the Graduate Board recommending that the dissertation be accepted. Completed dissertations will be formatted and submitted to the Milton S. Eisenhower Library for electronic publication (http://guides.library.jhu.edu/etd).

Teaching Requirement
All Ph.D. students are required to serve as a Teaching Assistant at least one semester during their program of study. As part of the requirement, the supervising course instructor must give the TA an opportunity to be in front of a group of students at least once during the course. Students are required to sign-up for the course EN.601.807 Teaching Practicum during the semester in which the requirement is being fulfilled, and at the end of the semester his/her performance will be evaluated by the course instructor.

Student Progress Review
Ph.D. students are reviewed annually by their advisor(s) and the department, and notified in writing as to their standing in the program. Students deemed to not be making satisfactory progress may be placed on probation.

Financial Aid
All full-time CS PhD students in good academic standing are fully-funded. Additional financial aid may be available for candidates of high promise. Fellowships provide a student with a stipend plus tuition. Research assistantships are available on sponsored research projects directed by members of the faculty. Teaching assistantships normally consist of tuition plus a stipend commensurate with the teaching or grading duties assigned. Students determined to have significant deficiency in spoken English may be required to take one or more semesters of English as a Second Language in order to qualify for employment as a teaching or research assistant.

For current faculty and contact information go to http://cs.jhu.edu/faculty/

Faculty Chair
Randal Burns
Professor: storage systems, high performance computing, and data-intensive scientific computing.

Professors
Yair Amir
Distributed systems, resilient clouds and critical infrastructure, overlay networks, distributed algorithms.

Jason M. Eisner
Computational linguistics (syntax and phonology), natural language processing, statistical machine learning, programming language design.

Gregory D. Hager
Mandell Bellmore Professor; Director, Malone Center for Engineering in Healthcare: vision, robotics, human-machine systems, computer-integrated medicine.

Philipp Koehn
Statistical machine translation.

S. Rao Kosaraju
Edward J. Schaefer Professor in Engineering: design of algorithms, pattern matching, and derandomization.

Aviel Rubin
Technical Director, Information Security Institute: system and networking security, computer privacy, applied cryptography.

Steven Salzberg
Bloomberg Distinguished Professor: genomics, bioinformatics, genome assembly, gene finding, sequence analysis algorithms.

Scott F. Smith
Programming languages, type systems, security in language design, component programming languages.

Alexander Szalay
Bloomberg Distinguished Professor: data intensive computing, theoretical astrophysics, galaxy formation.

Russell H. Taylor
John C. Malone Professor; Director, LCSR & CISST ERC: medical robotics, computer-integrated interventional medicine, medical image analysis, human-machine robotic systems.

David Yarowsky
Natural language and speech processing, information retrieval, machine translation, and machine learning.

Alan Yuille
Bloomberg Distinguished Professor: computational models of vision, mathematical models of cognition, artificial intelligence, neural networks.

Associate Professors
Mark Dredze
John C. Malone Assistant Professor: machine learning, natural language processing, health informatics.

Michael Kazhdan
Computer graphics, surface reconstruction, image and geometry processing.

Michael Schatz
Bloomberg Distinguished Associate Professor: novel algorithms for comparative genomics, human genetics, and personalized medicine.

Assistant Professors
Raman Arora
Machine learning, statistical signal processing, stochastic approximation algorithms, applications to speech and language processing.

Vladimir Braverman
Algorithms, massive data sets, data streams, and database systems.

Michael Dinitz
Theoretical computer science, approximation algorithms, applications to networks and distributed computing.

Soudeh Ghorbani
Networked systems, high-performance infrastructure, cloud applications, system design.

Matthew Green
Applied cryptography, cryptographic protocol design, analysis of practical security systems, privacy-preserving storage and identification technologies.

Chien-Ming Huang
John C. Malone Assistant Professor: Human robot interaction, human computer interaction, artificial intelligence, robotics.

Ryan P. Huang
Operating systems, distributed systems, software engineering, programming languages.

Abhishek Jain
Cryptography, security, theoretical computer science.

Xin Jin
Computer networking, distributed systems, software-defined networking, cloud computing, big data.

Benjamin Langmead
Computational genomics, sequence alignment, text indexing, parallel and high performance computing.

Xin Li
Theory of computation, randomness, complexity theory, distributed computing, cryptography.

Suchi Saria
John C. Malone Assistant Professor: machine learning, computational medicine, health informatics, and applications of machine learning in natural language processing, activity recognition and human-machine systems.

Ilya Shpitser
John C. Malone Assistant Professor: causal inference and missing data, graphical models, longitudinal data analysis in medicine and epidemiology.

Benjamin Van Durme
Artificial intelligence, natural language processing (computational semantics), and streaming algorithms.

Research Professors
Peter Kazanzides
Medical robots, computer-assisted surgery, real-time systems.

Nassir Navab
Augmented reality, vision, medical image computing and computer assisted interventions.

Associate Research Professors
Philippe Burlina
Computer vision, visual analysis and communications, multi-modality image exploitation, enterprise software systems for content and e-process management.

Chris Callison-Burch
Statistical natural language processing, machine translation, paraphrasing, evaluation of human language technologies.

Susan Hohenberger-Waters
Cryptography, computer security, algorithms, and complexity theory.

James Mayfield
Information retrieval, cross-language retrieval, information extraction, natural language processing.

Assistant Research Professors
Haider Ali
Computer vision, medical robotics, activity analysis, statistically-based deep learning techniques.

Kevin Duh
Natural language processing, machine learning.

Will Gray Roncal
Computer vision, image analysis, big data analytics.

Simon Leonard
Visual servoing, hand-eye coordination.

Christine Piatko
Computational geometry, information visualization, information retrieval.

Austin Reiter
Application of computer vision to robotics, machine vision, 3D reconstruction, image registration, visual recognition.

I-Jeng Wang
Wireless networking, Bayesian networks, probabilistic models.

**Associate Teaching Professors**

Sara Miner More
Foundations of computing, computer science education, cryptography, information flow.

Joanne Selinski
Director of Undergraduate Studies: CS education, software engineering.

**Associate Research Scientist**

Anton Dahbura
Executive Director, Information Security Institute: Information security, fault-tolerant computing, distributed systems, testing.

**Assistant Research Scientist**

Matt Post
Machine translation, syntax, parsing and language modeling.

**Part-time Faculty**

Ayo Akinyele
Adjunct Associate Research Engineer: applied cryptography, crypto automation, computer security.

Phillip Graff
Lecturer: machine learning.

Harold Lehmann
Lecturer; Professor (Health Sciences Informatics): medical informatics.

Timothy Leschke
Lecturer: computer ethics.

Jared Markowitz
Lecturer: machine learning.

Seth Nielson
Adjunct Associate Research Scientist: network security.

Lanier Watkins
Adjunct Associate Research Scientist: critical infrastructure security, network security.

**Visiting Faculty**

Mitra Basu
Visiting Professor: computational biology, pattern recognition, neural networks, artificial intelligence.

Kevin Kornegay
Visiting Professor: IoT device security, reverse engineering, hardware assurance, secure embedded system design, side-channel analysis, differential fault analysis.

Yansheng Li
Visiting Assistant Professor: visual saliency modeling, deep feature learning, image retrieval and classification.

Wei Shen
Visiting Assistant Professor: computer vision, deep learning, object recognition and detection.

**Adjunct Faculty**

Gabor Fichtinger
Adjunct Professor: applied surgical robotics, surgical CAD/CAM systems, percutaneous therapies, stereotactic radiosurgery.

**Joint Appointments**

Amitabh Basu
Assistant Professor (Applied Mathematics and Statistics): optimization, discrete and combinatorial geometry, operations research, convex analysis.

Alexis Battle
Assistant Professor (Biomedical Engineering): genetics of complex traits, graphical models, transfer learning, structured regularization methods.

Muynatu A. Lediju Bell
Assistant Professor (Electrical and Computer Engineering): ultrasound imaging, photoacoustic imaging, image quality improvements, advanced beamforming methods, light delivery systems, medical robotics, image-guided surgery, technology development, medical device design, clinical translation.

Emad Boctor
Assistant Professor (Radiology-Medical Imaging Physics): image-guided intervention, ultrasound imaging, elasticity, and thermal imaging.

Tamas Budavari
Assistant Professor (Applied Mathematics and Statistics): computational statistics, bayesian inference, low-dimensional embeddings, streaming and randomized algorithms.

Gregory Chirikjian
Professor (Mechanical Engineering): robotics, kinematics, dynamics, control, motion planning.

Noah Cowan
Professor (Mechanical Engineering): sensor-based control of locomotion and manipulation, and biologically inspired robotics.

Ralph Etienne-Cummings
Assistant Professor (Radiology-Medical Imaging Physics): mixed-signal VLSI, computational sensors, robotics, neuromorphic engineering.

James Fill
Professor (Applied Mathematics and Statistics): probability, stochastic processes, random structures, and algorithms.

Liliana Florea
Assistant Professor (McKusick-Nathans Institute for Genetic Medicine): application of computation techniques towards modeling and solving problems in biology and genetic medicine.

Rachel Karchin
Associate Professor (Biomedical Engineering): computational molecular biology, bioinformatics, genetic variation.

Sanjeev Khudanpur
Associate Professor (Electrical and Computer Engineering): information theory, statistical language modeling for speech recognition and machine translation.

Enrique Mallada
Assistant Professor (Electrical and Computer Engineering): networked dynamics, distributed systems.

Michael I Miller
Professor (Biomedical Engineering): image understanding, computer vision, medical imaging, computational anatomy.

Mihaela Pertea
Assistant Professor (Medicine): computational tools for RNA-seq analysis, gene finding, splice site prediction, sequence motif finding.

Carey Priebe
Professor (Applied Mathematics and Statistics): computational statistics, kernel and mixture estimates, statistical pattern recognition, and statistical image analysis.

Jerry L. Prince
William B. Kouwenhoven Professor (Electrical and Computer Engineering): image processing, computer vision, medical imaging.

Rebecca Schulman
Assistant Professor (Chemical and Biomolecular Engineering): molecular programming, DNA nanotechnology, self-assembly (theory and experiment), theoretical and systems biology, smart materials, nanoscale robotics.

Ralph Semmel
Professor (Director, APL): artificial intelligence, database systems, software engineering.

Jeff Siewersden
John C. Malone Professor (Biomedical Engineering): imaging physics, diagnostic radiology, image-guided interventions.

James Taylor
Associate Professor (Biology): genome informatics.

Archana Venkataraman
John C. Malone Assistant Professor (Electrical and Computer Engineering): multimodal integration, network modeling, clinical neuroscience.

Rene Vidal
Professor (Biomedical Engineering): computer vision, machine learning, robotics, and control.

Joshua T. Vogelstein
Assistant Professor (Biomedical Engineering): big data science, connectomics, statistical neuroscience.

Louis Whitcomb
Professor (Mechanical Engineering): dynamics and control of mechanical systems.

Raimond L. Winslow
Professor (Biomedical Engineering): modeling of biological systems, nonlinear systems theory, grid computing and data management, biomedical ontologies.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
EN.601.104. Computer Ethics. 1.0 Credit.
Students will examine a variety of topics regarding policy, legal, and moral issues related to the computer science profession itself and to the proliferation of computers in all aspects of society, especially in the era of the Internet. The course will cover various general issues related to ethical frameworks and apply those frameworks more specifically to the use of computers and the Internet. The topics will include privacy issues, computer crime, intellectual property law -- specifically copyright and patent issues, globalization, and ethical responsibilities for computer science professionals. Work in the course will consist of weekly assignments on one or more of the readings and a final paper on a topic chosen by the student and approved by the instructor.
Instructor(s): T. Leschke
Area: Humanities.

EN.601.105. M & Ms: Freshman Experience. 1.0 Credit.
This course provides freshmen computer science majors with an introduction to the field and department. A variety of faculty members will provide a mix of historical context and current topics. Classes will be interactive, enabling students to think about and explore topics in a fun way, as well as get to know their classmates. CS non-freshmen and minors may enroll by permission only. Satisfactory/Unsatisfactory only.
Instructor(s): J. Selinski.

EN.601.107. Introductory Programming in Java. 3.0 Credits.
This course introduces fundamental structured and object-oriented programming concepts and techniques, using Java, and is intended for all who plan to use computer programming in their studies and careers. Topics covered include variables, arithmetic operators, control structures, arrays, functions, recursion, dynamic memory allocation, files, class usage and class writing. Program design and testing are also covered, in addition to more advanced object-oriented concepts including inheritance and exceptions as time permits. First-time programmers are strongly advised to take EN.601.108 concurrently in Fall/Spring semesters.
Prerequisites: Students may receive credit for only one of EN.600.107/EN.601.107, EN.600.112, or EN.580.200
Instructor(s): J. Selinski; S. More
Area: Engineering.

EN.601.108. Introduction to Programming Lab. 1.0 Credit.
This course is intended for novice programmers, and must be taken in conjunction with EN.601.107. The purpose of this course is to give first-time programmers extra hands-on practice with guided supervision. Students will work in pairs each week to develop working programs, with checkpoints for each development phase. Must have familiarity with computers. Satisfactory/Unsatisfactory only.
Corequisites: EN.600.107
Instructor(s): J. Selinski; P. Froehlich; S. More
Area: Engineering.

This course will give an introduction to the concepts and major elements of computer-integrated surgery (CIS) through clinical applications. Students will learn to ask questions and look for answers the way clinical engineers build and analyze CIS systems. Major topics will include medical imaging, image processing, surgical planning, surgical robotics, robot navigation, systems integration, and clinical validation. No computer programming will be necessary to complete the assignments.
Instructor(s): S. Leonard
Area: Engineering.
EN.601.220. Intermediate Programming. 4.0 Credits.
This course teaches intermediate to advanced programming, using C and C++. (Prior knowledge of these languages is not expected.) We will cover low-level programming techniques, as well as object-oriented class design, and the use of class libraries. Specific topics include pointers, dynamic memory allocation, polymorphism, overloading, inheritance, templates, collections, exceptions, and others as time permits. Students are expected to learn syntax and some fundamental programming features independently. Course work involves significant programming projects in both languages.
Prerequisites: AP Computer Science, or C+ or better in EN.600.107/EN.601.220 or EN.600.226 or EN.600.112.
Instructor(s): J. Selinski; M. Darvish Darab; S. More
Area: Engineering.

EN.601.226. Data Structures. 4.0 Credits.
This course covers the design and implementation of data structures including arrays, stacks, queues, linked lists, binary trees, heaps, balanced trees (e.g. 2-3 trees, AVL-trees) and graphs. Other topics include sorting, hashing, memory allocation, and garbage collection. Course work involves both written homework and Java programming assignments.
Prerequisites: EN.600.120 OR EN.601.220 OR EN.600.107 OR EN.601.107 or equivalent with C+ or better grades.
Instructor(s): M. Schatz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.229. Computer System Fundamentals. 3.0 Credits.
We study the design and performance of a variety of computer systems from simple 8-bit micro-controllers through 32/64-bit RISC architectures all the way to ubiquitous x86 CISC architecture. We'll start from logic gates and digital circuits before delving into arithmetic and logic units, registers, caches, memory, stacks and procedure calls, pipelined execution, superscalar architectures, memory management units, etc. Along the way we'll study several typical instruction set architectures and review concepts such as interrupts, hardware and software exceptions, serial and other peripheral communications protocols, etc. A number of programming projects, frequently done in assembly language and using various processor simulators, round out the course.
Prerequisites: EN.600.120
Instructor(s): P. Froehlich
Area: Engineering.

EN.601.231. Automata & Computation Theory. 3.0 Credits.
This course is an introduction to the theory of computing. Topics include design of finite state automata, pushdown automata, linear bounded automata, Turing machines and phrase structure grammars; correspondence between automata and grammars; computable functions, decidable and undecidable problems, P and NP problems, NP-completeness, and randomization. Students may not receive credit for EN.601.231/EN.600.271 and EN.601.631/EN.600.471 for the same degree.
Prerequisites: EN.550.171
Instructor(s): X. Li
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.255. Introduction to Video Game Design. 3.0 Credits.
A broad survey course in video game design (as opposed to mathematical game theory), covering artistic, technical, as well as sociological aspects of video games. Students will learn about the history of video games, archetypal game styles, computer graphics and programming, user interface and interaction design, graphical design, spatial and object design, character animation, basic game physics, plot and character development, as well as psychological and sociological impact of games. Students will design and implement an experimental video game in interdisciplinary teams of 3-4 students as part of a semester-long project. Section 1 requires technical skills, including at least one programming course (preferably 2 or more). Section 2 requires artistic skills, including at least one multimedia course (preferably 2 or more). Open to sophomores and above.
Corequisites: EN.601.256
Instructor(s): P. Froehlich
Area: Engineering.

EN.601.256. Introduction to Video Game Design Lab. 1.0 Credit.
A lab course in support of 601.255: Introduction to Video Game Design covering a variety of multi-media techniques and applications from image processing, through sound design, to 3D modeling and animation. See 601.255: Introduction to Video Game Design for details about enrolling.
Corequisites: EN.601.255
Instructor(s): P. Froehlich.

EN.601.290. User Interfaces and Mobile Applications. 3.0 Credits.
This course will provide students with a rich development experience, focused on the design and implementation of user interfaces and mobile applications. A brief overview of human computer interaction will provide context for designing, prototyping and evaluating user interfaces. Students will invent their own mobile applications and implement them using the Android SDK, which is JAVA based. An overview of the Android platform and available technologies will be provided, as well as XML for layouts, and general concepts for effective mobile development. Students will be expected to explore and experiment with outside resources in order to learn technical details independently. There will also be an emphasis on building teamwork skills, and on using modern development techniques and tools.
Prerequisites: EN.600.120 AND EN.600.226
Instructor(s): J. Selinski
Area: Engineering.

EN.601.295. Developing Health IT Applications. 3.0 Credits.
This course is a project-based introduction to working on successful projects in health care. In the first half of the term, students perform reading and homework assignments designed to introduce: (1) the context of health care delivery and health IT, (2) techniques to overcome challenges to conducting health care data analyses, and (3) techniques to design meaningful applications around health care data. In the second half of the term, students work in small groups to solve a real-world problem of their choosing. Includes exercises in written and oral communication and team building.
Prerequisites: (EN.600.120 OR EN.601.220) AND (EN.600.226 OR EN.601.226)
Instructor(s): C. Overby Taylor; I. Shpitser
Area: Engineering.
EN.601.310. Software for Resilient Communities. 3.0 Credits.
This is a project-based course focusing on the design and implementation of practical software systems. Students will work in small teams to design and develop useful open-source software products that support our communities. Students will be paired with community partners and will aim to develop software that can be used after the course ends to solve real problems facing those partners today. Instructors will connect with the community partners and determine viable project areas prior to the course start. Students will meet with their community partners to analyze the challenges in their project area, agree on a concrete target project outcome, and gather requirements for their project. Based on these requirements, students will design and implement open-source software systems. [Oral]
Prerequisites: EN.600.120/EN.601.220 AND EN.600.226/EN.601.226
Instructor(s): A. Babay; Y. Amir
Area: Engineering.

EN.601.315. Databases. 3.0 Credits.
Introduction to database management systems and database design, focusing on the relational and object-oriented data models, query languages and query optimization, transaction processing, parallel and distributed databases, recovery and security issues, commercial systems and case studies, heterogeneous and multimedia databases, and data mining. [Systems] [www.cs.jhu.edu/~yarowsky/cs415.html]
Prerequisites: EN.600.226; Students may receive credit for only one of EN.600.315, EN.600.415, EN.601.315, EN.601.415, EN.601.615.
Instructor(s): D. Yarowsky
Area: Engineering.

EN.601.317. Distributed Systems. 3.0 Credits.
This course teaches how to design and implement protocols that enable processes to exchange information, cooperate, and coordinate efficiently over a computer network. Topics include communication protocols, group communication, distributed databases, distributed operating systems, and security. [Systems].
Students may receive credit for EN.601.317 or EN.601.417 but not both.
Prerequisites: Students may receive credit for 600.337 or 600.437, but not both.
Instructor(s): Y. Amir
Area: Engineering.

EN.601.318. Operating Systems. 3.0 Credits.
This course covers fundamental topics related to operating systems theory and practice. Topics include processor management, storage management, concurrency control, multi-processing and multiprocessing, device drivers, operating system components (e.g., file system, kernel), modeling and performance measurement, protection and security, and recent innovations in operating system structure. Course work includes the implementation of operating systems techniques and routines, and critical parts of a small but functional operating system.
Prerequisites: EN.600.120 AND EN.600.226 AND EN.600.233; Students may receive credit for only one of EN.600.318, EN.600.418, EN.601.318, EN.601.418, EN.601.618.
Instructor(s): P. Huang
Area: Engineering.

EN.601.320. Parallel Programming. 3.0 Credits.
This course prepares the programmer to tackle the massive data sets and huge problem size of modern scientific and enterprise computing. Google and IBM have commented that undergraduate CS majors are unable to "break the single server mindset" (http://www.google.com/intl/en/press/pressrel/20071008_ibm_univ.html). Students taking this course will abandon the comfort of serial algorithmic thinking and learn to harness the power of cutting-edge software and hardware technologies. The issue of parallelism spans many architectural levels. Even "single server" systems must parallelize computation in order to exploit the inherent parallelism of recent multi-core processors. The course will examine different forms of parallelism in four sections. These are: (1) massive data-parallel computations with Hadoop; (2) programming compute clusters with MPI; (3) thread-level parallelism in Java; and, (4) GPGPU parallel programming with NVIDIA's Cuda. Each section will be approximately 3 weeks and each section will involve a programming project. The course is also suitable for undergraduate and graduate students from other science and engineering disciplines that have prior programming experience. [Systems] Prerequisite: EN.600.233/EN.601.229 and EN.601.226
Prerequisites: EN.600.226 AND EN.601.226; Students may receive credit for only one of EN.600.320, EN.600.420, EN.601.320, EN.601.420, EN.601.620.
Instructor(s): R. Burns
Area: Engineering.

EN.601.325. Declarative Methods. 3.0 Credits.
Suppose you could simply write down a description of your problem, and let the computer figure out how to solve it. What notation could you use? What strategy should the computer then use? In this survey class, you'll learn to recognize when your problem is an instance of satisfiability, constraint programming, logic programming, dynamic programming, or mathematical programming (e.g., integer linear programming). For each of these related paradigms, you'll learn to reformulate hard problems in the required notation and apply off-the-shelf software that can solve any problem in that notation -- including NP-complete problems and many of the problems you'll see in other courses and in the real world. You'll also gain some understanding of the general-purpose algorithms that power the software. [Analysis] Students can only receive credit for EN.601.325 or EN.601.425, not both.
Instructor(s): J. Eisner
Area: Engineering.

EN.601.328. Compilers and Interpreters. 3.0 Credits.
Introduction to compiler design, including lexical analysis, parsing, syntax-directed translation, symbol tables, run-time environments, and code generation and optimization. Students are required to write a compiler as a course project. [Systems] Co-listed with EN.601.428
Prerequisites: EN.600.120 AND EN.600.226; Students may receive credit for only one of EN.600.328, EN.600.428, EN.601.328, EN.601.428, EN.601.628.
Instructor(s): P. Froehlich
Area: Engineering.
EN.601.350. Introduction to Genomic Research. 3.0 Credits.
This course will use a project-based approach to introduce undergraduates to research in computational biology and genomics. During the semester, students will take a series of large data sets, all derived from recent research, and learn all the computational steps required to convert raw data into a polished analysis. Data challenges might include the DNA sequences from a bacterial genome project, the RNA sequences from an experiment to measure gene expression, the DNA from a human microbiome sequencing experiment, and others. Topics may vary from year to year. In addition to computational data analysis, students will learn to do critical reading of the scientific literature by reading high-profile research papers that generated groundbreaking or controversial results. [Applications] Recommended Course Background: Knowledge of the Unix operating system and programming expertise in a language such as Perl or Python.
Instructor(s): S. Salzberg
Area: Engineering.

EN.601.355. Video Game Design Project. 3.0 Credits.
An intensive capstone design project experience in video game development. Students will work in groups of 4-8 on developing a complete video game of publishable quality. Teams will (hopefully) include programmers, visual artists, composers, and writers. Students will be mentored by experts from industry and academia. Aside from the project itself, project management and communication skills will be emphasized. Enrollment is limited to ensure parity between the various disciplines. [General] May involve travel to MICA. Junior or senior standing recommended.
Prerequisites: EN.600.255
Instructor(s): P. Froehlich
Area: Engineering.

EN.601.356. Seminar: Computer Integrated Surgery II. 1.0 Credit.
Students may receive credit for EN.601.456 or EN.601.356, but not both. Lecture only version of EN.601.456 (no project). Recommended Course Background: EN.601.455 or instructor permission required.
Instructor(s): R. Taylor
Area: Engineering.

EN.601.359. Knowledge Discovery from Text. 3.0 Credits.
The world is full of text: webpages, emails, newspaper articles, tweets, medical records, and so on. The purpose of text is for people to convey knowledge to other people. This course focuses on how computers analyze large, potentially streaming, text collections to automatically discover knowledge on their own (and to help people better find it themselves). Lectures and assignments will cover relevant topics in automatic classification (applied machine learning), linguistics, high-performance computing, and systems engineering, working with software systems for automatic question answering, populating knowledge bases, and aggregate analysis of social media such as Twitter. [Applications]
Prerequisites: EN.600.120 AND EN.600.226
Instructor(s): B. Van Durme; T. Lippincott
Area: Engineering.

EN.601.382. Deep Learning Lab. 1.0 Credit.
This course is an optional hands-on lab supplement for a few courses in the curriculum. It will provide tutorial support and practical experience for developing deep ML systems using PyTorch and TensorFlow, and may provide exposure to some other frameworks. It will also go into detail on practical methods for scalable learning on large data sets, and other more practical issues in setting up deep learning systems.
Corequisites: Students must also register for EN.601.482 OR EN.601.682 OR EN.601.765.
Instructor(s): G. Hager
Area: Engineering.

EN.601.402. Digital Health and Biomedical Informatics. 1.0 Credit.
Advances in technology are driving a change in medicine, from personalized medicine to population health. Computers and information technology will be critical to this transition. We shall discuss some of the coming changes in terms of computer technology, including computer-based patient records, clinical practice guidelines, and region-wide health information exchanges. We will discuss the underlying technologies driving these developments - databases and warehouses, controlled vocabularies, and decision support.
Instructor(s): H. Lehmann
Area: Engineering.

EN.601.411. Computer Science Innovation & Entrepreneurship II. 3.0 Credits.
This course is the second half of a two-course sequence and is a continuation of course EN.601.410.01, CS Innovation and Entrepreneurship, offered by the Center for Leadership Education (CLE). In this sequel course the student groups, directed by CS faculty, will implement the business idea which was developed in the first course and will present the implementations and business plans to an outside panel made up of practitioners, industry representatives, and venture capitalists. [General]
Prerequisites: EN.601.410
Instructor(s): A. Dahbura; L. Aronhime
Area: Engineering.

EN.601.414. Computer Networks. 4.0 Credits.
Topics covered will include application layer protocols (e.g. HTTP, FTP, SMTP), transport layer protocols (UDP, TCP), network layer protocols (e.g. IP, ICMP), link layer protocols (e.g. Ethernet) and wireless protocols (e.g. IEEE 802.11). The course will also cover routing protocols such as link state and distance vector, multicast routing, and path vector protocols (e.g. BGP). The class will examine security issues such as firewalls and denial of service attacks. We will also study DNS, NAT, Web caching and CDNs, peer to peer, and protocol tunneling. Finally, we will explore security protocols (e.g. TLS, SSH, IPSec), as well as some basic cryptography necessary to understand these. Grading will be based on hands-on programming assignments, homeworks and two exams. [Systems]
Prerequisites: EN.600.226 AND EN.600.233; Students may receive credit for only one of EN.600.344, EN.600.444, EN.601.414, EN.601.614.
Instructor(s): M. Green; X. Jin
Area: Engineering.
EN.601.415. Databases. 3.0 Credits.
Similar material as EN.601.315 covered in more depth for advanced undergraduates. Introduction to database management systems and database design, focusing on the relational and object-oriented data models, query languages and query optimization, transaction processing, parallel and distributed databases, recovery and security issues, commercial systems and case studies, heterogeneous and multimedia databases, and data mining. [Systems] (www.cs.jhu.edu/~yarowsky/cs415.html)
Prerequisites: Students may receive credit for only one of EN.600.315, EN.600.415, EN.601.315, EN.601.415.,EN.600.226
Instructor(s): D. Yarowsky
Area: Engineering.

EN.601.417. Distributed Systems. 3.0 Credits.
Graduate version of 601.317 Systems. Students may receive credit for 601.317 or 601.417 but not both. Recommended Course Background: EN.601.220, EN.601.226
Instructor(s): Y. Amir
Area: Engineering.

EN.601.418. Operating Systems. 3.0 Credits.
Similar material as EN.601.318, covered in more depth. Intended for advanced undergraduate students. This course covers fundamental topics related to operating systems theory and practice. Topics include processor management, storage management, concurrency control, multi-programming and processing, device drivers, operating system components (e.g., file system, kernel), modeling and performance measurement, protection and security, and recent innovations in operating system structure. Course work includes the implementation of operating systems techniques and routines, and critical parts of a small but functional operating system.
Prerequisites: EN.600.120 AND EN.600.226 AND EN.600.233; Students may receive credit for only one of EN.600.318, EN.600.418, EN.601.318, EN.601.418, EN.601.618.
Instructor(s): P. Huang
Area: Engineering.

EN.601.420. Parallel Programming. 3.0 Credits.
More advanced version of EN.601.320. Students may receive credit for EN.601.320 or EN.601.420, but not both. Prerequisite: EN.601.226 and EN.601.229 Computer System Fundamentals.
Prerequisites: EN.600.226 AND EN.600.233; Students may receive credit for only one of EN.600.320, EN.600.420, EN.601.320, EN.601.420, EN.601.620.
Instructor(s): R. Burns
Area: Engineering.

EN.601.421. Object Oriented Software Engineering. 3.0 Credits.
This course covers object-oriented software construction methodologies and their application. The main component of the course is a large team project on a topic of your choosing. Course topics covered include object-oriented analysis and design, UML, design patterns, refactoring, program testing, code repositories, team programming, and code reviews. [Systems or Applications] (http://pl.cs.jhu.edu/oose/index.shtml)
Prerequisites: EN.600.120 AND EN.600.226; Students may receive credit for only one of EN.600.321, EN.600.421, EN.601.421, EN.601.621.
Instructor(s): S. Smith
Area: Engineering.

EN.601.425. Declarative Methods. 3.0 Credits.
Students can only receive credit for EN.601.325 or EN.601.425, not both. Graduate level version of EN.601.325. Recommended Course Background: EN.601.226, EN.601.231, AS.110.107/AS.110.109
Instructor(s): J. Eisner
Area: Engineering.

EN.601.426. Principles of Programming Languages. 3.0 Credits.
Functional, object-oriented, and other language features are studied independent of a particular programming language. Students become familiar with these features by implementing them. Most of the implementations are in the form of small language interpreters. Some type checkers and a small compiler will also be written. The total amount of code written will not be overly large, as the emphasis is on concepts. The ML programming language is the implementation language used. [Analysis] Prerequisites include EN.601.226. No Freshmen or Sophomores.
Prerequisites: EN.600.226
Instructor(s): S. Smith
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.427. Ontologies and Knowledge Representation. 3.0 Credits.
Knowledge representation (KR) deals with the possible structures by which the content of what is known can be formally represented in such a way that queries can be posed and inferences drawn. Ontology concerns the hierarchy- cal classification of entities from given domains of knowledge together with the relations between various classes or subclasses. We begin with KR, examining the standard variety of frameworks developed or implemented over the last twenty years, including 1st-order logic and automated theorem proving, networks, frames, and description logics. Then we move on to a study of the problems inherent in ontology development and examine the some of the currently prevalent environments, including Universal Modeling Language, OWL and Protege’, RDFS and semantic web applications. [Analysis] Recommended Course Background: EN.601.107
Instructor(s): R. Rynasiewicz
Area: Humanities, Quantitative and Mathematical Sciences.

EN.601.428. Compilers & Interpreters. 3.0 Credits.
Prerequisites: EN.600.120 AND EN.600.226 AND EN.600.233
Instructor(s): P. Froehlich
Area: Engineering.

EN.601.430. Combinatorics & Graph Theory in Computer Science. 3.0 Credits.
This is a graduate level course studying the applications of combinatorics and graph theory in computer science. We will start with some basic combinatorial techniques such as counting and pigeon hole principle, and then move to advanced techniques such as the probabilistic method, spectral graph theory and additive combinatorics. We shall see their applications in various areas in computer science, such as proving lower bounds in computational models, randomized algorithms, coding theory and pseudorandomness. [Analysis] Recommended Course Background: probability theory and linear algebra
Prerequisites: EN.550.171
Instructor(s): X. Li
Area: Engineering, Quantitative and Mathematical Sciences.
EN.601.433. Intro Algorithms. 3.0 Credits.
This course concentrates on the design of algorithms and the rigorous analysis of their efficiency. Topics include the basic definitions of algorithmic complexity (worst case, average case); basic tools such as dynamic programming, sorting, searching, and selection; advanced data structures and their applications (such as union-find); graph algorithms and searching techniques such as minimum spanning trees, depth-first search, shortest paths, design of online algorithms and competitive analysis. [Analysis]
Prerequisites: EN.600.226 AND EN.550.171; Students may receive credit for only one of EN.600.363, EN.600.463, EN.601.433, EN.601.633.
Instructor(s): M. Dinitz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.434. Randomized and Big Data Algorithms. 3.0 Credits.
The course emphasizes algorithmic design aspects, and how randomization can be a helpful tool. The topics covered include: tail inequalities, linear programming relaxation & randomized rounding, derandomization, existence proofs, universal hashing, markov chains, metropolis and metropolis-hastings methods, mixing by coupling and by eigenvalues, counting problems, semi-definite programming and rounding, lower bound arguments, and applications of expanders. [Analysis] (www.cs.jhu.edu/~cs464) Recommended Course Background: Probability
Prerequisites: EN.600.363 AND (EN.550.420 OR EN.550.620 OR EN.550.310) or similar; Students may receive credit for only one of EN.600.464, EN.600.664, EN.601.434, EN.601.634.
Instructor(s): V. Braverman
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.435. Approximation Algorithms. 3.0 Credits.
This course provides an introduction to approximation algorithms. Topics include vertex cover, TSP, Steiner trees, cuts, greedy approach, linear and semi-definite programming, primal-dual method, and randomization. Additional topics will be covered as time permits. There will be a final project. Students may receive credit for EN.601.435 or EN.601.635, but not both. [Analysis]
Instructor(s): M. Dinitz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.436. Algorithmic Game Theory. 3.0 Credits.
This course provides an introduction to algorithmic game theory: the study of games from the perspective of algorithms and theoretical computer science. There will be a particular focus on games that arise naturally from economic interactions involving computer systems (such as economic interactions between large-scale networks, online advertising markets, etc.), but there will also be broad coverage of games and mechanisms of all sorts. Topics covered will include a) complexity of computing equilibria and algorithms for doing so, b) (in)efficiency of equilibria, and c) algorithmic mechanism design. [Analysis]
Prerequisites: EN.600.363 OR EN.600.463 OR EN.601.433 OR EN.601.633
Instructor(s): M. Dinitz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.440. Web Security. 3.0 Credits.
This course begins with reviewing basic knowledge of the World Wide Web, and then exploring the central defense concepts behind Web security, such as same-origin policy, cross-origin resource sharing, and browser sandboxing. It will cover the most popular Web vulnerabilities, such as cross-site scripting (XSS) and SQL injection, as well as how to attack and penetrate software with such vulnerabilities. Students will learn how to detect, respond, and recover from security incidents. Newly proposed research techniques will also be discussed. [Systems]
Prerequisites: (EN.601.226 OR EN.600.226) AND (EN.601.229 OR EN.600.233)
Instructor(s): Y. Cao
Area: Engineering.

EN.601.441. Blockchains and Cryptocurrencies. 3.0 Credits.
This course will introduce students to cryptocurrencies and the main underlying technology of Blockchains. The course will start with the relevant background in cryptography and then proceed to cover the recent advances in the design and applications of blockchains. This course should primarily appeal to students who want to conduct research in this area or wish to build new applications on top of blockchains. It should also appeal to those who have a casual interest in this topic or are generally interested in cryptography. Students are expected to have mathematical maturity. [Analysis]
Prerequisites: Students may receive credit for only one of EN.600.451 OR EN.601.441 OR EN.601.641;EN.601.226 AND (EN.553.211 OR EN.553.310 OR EN.553.311 OR EN.560.348 OR EN.553.420)
Instructor(s): A. Jain
Area: Engineering.

EN.601.442. Modern Cryptography. 3.0 Credits.
Modern Cryptography includes seemingly paradoxical notions such as communicating privately without a shared secret, proving things without leaking knowledge, and computing on encrypted data. In this challenging but rewarding course we will start from the basics of private and public key cryptography and go all the way up to advanced notions such as zero-knowledge proofs, functional encryption and program obfuscation. The class will focus on rigorous proofs and require mathematical maturity. [Analysis]
Prerequisites: EN.600.271 AND (EN.553.420 or EN.553.310); Students may receive credit for only one of EN.600.442, EN.601.442, EN.601.642.
Instructor(s): A. Jain
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.443. Security & Privacy in Computing. 3.0 Credits.
This course will introduce students to cryptocurrencies and the main underlying technology of Blockchains. The course will start with the relevant background in cryptography and then proceed to cover the recent advances in the design and applications of blockchains. This course should primarily appeal to students who want to conduct research in this area or wish to build new applications on top of blockchains. It should also appeal to those who have a casual interest in this topic or are generally interested in cryptography. Students are expected to have mathematical maturity. [Analysis]
Prerequisites: Students may receive credit for only one of EN.600.451 OR EN.601.441 OR EN.601.641;EN.601.226 AND (EN.553.211 OR EN.553.310 OR EN.553.311 OR EN.560.348 OR EN.553.420)
Instructor(s): A. Jain
Area: Engineering.

EN.601.444. Security & Privacy in Computing. 3.0 Credits.
Lecture topics will include computer security, network security, basic cryptography, system design methodology, and privacy. There will be a heavy work load, including written homework, programming assignments, exams and a comprehensive final. The class will also include a semester-long project that will be done in teams and will include a presentation by each group to the class. [Applications] Recommended Course Background: A basic course in operating systems and networking, or permission of instructor.
Prerequisites: (EN.600.318 OR EN.600.418) OR (EN.600.344 OR EN.600.444) AND (EN.600.233 OR EN.601.229); Students may receive credit for only one of EN.600.443, EN.601.443, EN.601.643.
Instructor(s): A. Rubin
Area: Engineering.
EN.601.444. Network Security. 3.0 Credits.
This course focuses on communication security in computer systems and networks. The course is intended to provide students with an introduction to the field of network security. The course covers network security services such as authentication and access control, integrity and confidentiality of data, firewalls and related technologies, Web security and privacy. Course work involves implementing various security techniques. A course project is required. [Systems]
Prerequisites: EN.600.120 AND EN.600.226 AND ( EN.600.344 OR EN.600.444 ) or permission;Students may receive credit for only one of EN.600.424, EN.650.424, EN.601.444, EN.601.644.
Instructor(s): S. Nielson
Area: Engineering.

EN.601.445. Practical Cryptographic Systems. 3.0 Credits.
This semester-long course will teach systems and cryptographic design principles by example: by studying and identifying flaws in widely-deployed cryptographic products and protocols. Our focus will be on the techniques used in practical security systems, the mistakes that lead to failure, and the approaches that might have avoided the problem. We will place a particular emphasis on the techniques of provable security and the feasibility of reverse-engineering undocumented cryptographic systems. [Systems]
Prerequisites: EN.600.226 AND EN.600.233;Students may receive credit for only one of EN.600.454, EN.601.445, EN.601.645.
Instructor(s): M. Green
Area: Engineering.

EN.601.447. Computational Genomics: Sequences. 3.0 Credits.
Your genome is the blueprint for the molecules in your body. It’s also a string of letters (A, C, G and T) about 3 billion letters long. How does this string give rise to you? Your heart, your brain, your health? This, broadly speaking, is what genomics research is about. This course will familiarize you with a breadth of topics from the field of computational genomics. The emphasis is on current research problems, real-world genomics data, and efficient software implementations for analyzing data. Topics will include: string matching, sequence alignment and indexing, assembly, and sequence models. Course will involve significant programming projects. [Applications]
Prerequisites: EN.600.120 AND EN.600.226;Students may receive credit for only one of EN.600.439, EN.600.639, EN.601.447, EN.601.647.
Instructor(s): B. Langmead
Area: Engineering.

EN.601.448. Computational Genomics: Data Analysis. 3.0 Credits.
Genomic data has the potential to reveal causes of disease, novel drug targets, and relationships among genes and pathways in our cells. However, identifying meaningful patterns from high-dimensional genomic data has required development of new computational tools. This course will cover current approaches in computational analysis of genomic data with a focus on statistical methods and machine learning. Topics will include disease association, prediction tasks, clustering and dimensionality reduction, data integration, and network reconstruction. There will be some programming and a project component. [Applications]
Prerequisites: EN.601.226 or other programming experience, probability and statistics, linear algebra or calculus.
Prerequisites: Students may receive credit for EN.600.438 or EN.600.638, but not both.]  
Instructor(s): A. Battle
Area: Engineering.

EN.601.452. Computational Biomedical Research. 3.0 Credits.
[Co-listed with AS.020.415] This course for advanced undergraduates includes classroom instruction in interdisciplinary research approaches and lab work on an independent research project in the lab of a Bloomberg Distinguished Professor and other distinguished faculty. Lectures will focus on cross-cutting techniques such as data visualization, statistical inference, and scientific computing. In addition to two 50-minute classes per week, students will commit to working approximately 3 hours per week in the lab of one of the professors. The student and professor will work together to schedule the research project. Students will present their work at a symposium at the end of the semester.
Instructor(s): M. Schatz
Area: Engineering.

EN.601.454. Augmented Reality. 3.0 Credits.
Same as EN.601.654, for undergraduate students. This course introduces students to the field of Augmented Reality. It reviews its basic definitions, principles and applications. It then focuses on Medical Augmented Reality and its particular requirements. The course also discusses the main issues of calibration, tracking, multi-modal registration, advance visualization and display technologies. Homework in this course will relate to the mathematical methods used for calibration, tracking and visualization in medical augmented reality. Students may also be asked to read papers and implement various techniques within group projects. Recommended Course Background: EN.601.220, EN.601.226, and AS.110.201. [Applications]
Prerequisites: EN.600.120 AND EN.600.226 AND (AS.110.201 OR EN.550.291);Students may receive credit for only one of EN.600.484, EN.600.684, EN.601.454, EN.601.654.
Instructor(s): N. Navab
Area: Engineering.

EN.601.455. Computer Integrated Surgery I. 4.0 Credits.
This course focuses on computer-based techniques, systems, and applications exploiting quantitative information from medical images and sensors to assist clinicians in all phases of treatment from diagnosis to preoperative planning, execution, and follow-up. It emphasizes the relationship between problem definition, computer-based technology, and clinical application and includes a number of guest lectures given by surgeons and other experts on requirements and opportunities in particular clinical areas. Recommended Course Background: EN.601.220, EN.601.457, EN.601.461, image processing.
Prerequisites: EN.600.226 AND (AS.110.201 OR AS.110.212 ) or permission of the instructor;Students may receive credit for only one of EN.600.445, EN.600.645, EN.601.455, EN.601.655.
Instructor(s): R. Taylor
Area: Engineering.
EN.601.456. Computer Integrated Surgery II. 3.0 Credits.
This weekly lecture/seminar course addresses similar material to EN.601.445, but covers selected topics in greater depth. In addition to material covered in lectures/seminars by the instructor and other faculty, students are expected to read and provide critical analysis/presentations of selected papers in recitation sessions. Students taking this course are required to undertake and report on a significant term project under the supervision of the instructor and clinical end users. Typically, this project is an extension of the term project from EN.601.445, although it does not have to be. Grades are based both on the project and on classroom recitations. Students wishing to attend the weekly lectures as a 1-credit seminar should sign up for EN.600.452. [Applications]
Prerequisites: EN.600.445 or EN.600.645 or permission; Students may receive credit for only one of EN.600.446, EN.600.646, EN.601.456, EN.601.656.
Instructor(s): R. Taylor
Area: Engineering.

EN.601.457. Computer Graphics. 3.0 Credits.
This course introduces computer graphics techniques and applications, including image processing, rendering, modeling and animation. [Applications]
Prerequisites: EN.600.120 AND EN.600.226, and linear algebra or permission of instructor; Students may receive credit for only one of EN.600.357, EN.601.457, EN.601.657.
Instructor(s): M. Kazhdan
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.459. Computational Geometry. 3.0 Credits.
This course will provide an introduction to computational geometry. It will cover a number of topics in two- and three-dimensions, including polygon triangulations and partitions, convex hulls, Delaunay and Voronoi diagrams, arrangements, and spatial queries. Time-permitting, we will also look at kD-trees, general BSP-trees, and quadtrees. [Analysis]
Recommended Course Background: EN.601.220 AND EN.601.226 AND (EN.600.363 OR EN.601.433).
Prerequisites: Students may receive credit for EN.600.459 or EN.600.659, but not both.
Instructor(s): M. Kazhdan
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.461. Computer Vision. 3.0 Credits.
This course gives an overview of fundamental methods in computer vision from a computational perspective. Methods studied include: camera systems and their modeling, computation of 3-D geometry from binocular stereo, motion, and photometric stereo; and object recognition. Edge detection and color perception are covered as well. Elements of machine vision and biological vision are also included. [Applications] Prerequisites: intro programming, linear algebra, and prob/stat.
Prerequisites: Students may receive credit for only one of EN.600.361, EN.600.461, EN.600.661, EN.601.461, EN.601.661.
Instructor(s): H. Ali
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.463. Algorithms for Sensor-Based Robotics. 3.0 Credits.
This course surveys the development of robotic systems for navigating in an environment from an algorithmic perspective. It will cover basic kinematics, configuration space concepts, motion planning, and localization and mapping. It will describe these concepts in the context of the ROS software system, and will present examples relevant to mobile platforms, manipulation, robotics surgery, and human-machine systems. [Analysis]
Prerequisites: EN.600.226 OR EN.601.226 and Linear Algebra and Probability; Students may receive credit for only one of EN.600.336, EN.600.436, EN.600.636, EN.601.463, EN.601.663.
Instructor(s): S. Leonard
Area: Engineering.

EN.601.464. Artificial Intelligence. 3.0 Credits.
The class is recommended for all scientists and engineers with a genuine curiosity about the fundamental obstacles to getting machines to perform tasks such as learning, planning and prediction. Materials will be primarily based on the popular textbook, Artificial Intelligence: A Modern Approach. Strong programming skills are expected, as well as basic familiarity with probability. For students intending to also take courses in Machine Learning (e.g., 601.475/675, 601.476/676), they may find it beneficial to take this course first, or concurrently. [Applications]
Prerequisites: EN.600.226; Students may receive credit for only one of EN.600.335, EN.600.435, EN.601.464, EN.601.664.
Instructor(s): B. Van Durme
Area: Engineering.

EN.601.465. Natural Language Processing. 4.0 Credits.
This course is an in-depth overview of techniques for processing human language. How should linguistic structure and meaning be represented? What algorithms can recover them from text? And crucially, how can we build statistical models to choose among the many legal answers? The course covers methods for trees (parsing and semantic interpretation), sequences (finite-state transduction such as morphology), and words (sense and phrase induction), with applications to practical engineering tasks such as information retrieval and extraction, text classification, part-of-speech tagging, speech recognition and machine translation. There are a number of structured but challenging programming assignments. [Applications]
Prerequisites: EN.600.226; Students may receive credit for only one of EN.600.465, EN.601.465, EN.601.665.
Instructor(s): J. Eisner
Area: Engineering.

EN.601.466. Information Retrieval and Web Agents. 3.0 Credits.
An in-depth, hands-on study of current information retrieval techniques and their application to developing intelligent WWW agents. Topics include a comprehensive study of current document retrieval models, mail/news routing and filtering, document clustering, automatic indexing, query expansion, relevance feedback, user modeling, information visualization and usage pattern analysis. In addition, the course explores the range of additional language processing steps useful for template filling and information extraction from retrieved documents, focusing on recent, primarily statistical methods. The course concludes with a study of current issues in information retrieval and data mining on the World Wide Web. Topics include web robots, spiders, agents and search engines, exploring both their practical implementation and the economic and legal issues surrounding their use. Recommended Course Background: EN.601.226
Prerequisites: EN.600.226
Instructor(s): D. Yarowsky
Area: Engineering.
EN.601.468. Machine Translation. 3.0 Credits.
Google translate can instantly translate between any pair of over fifty human languages (for instance, from French to English). How does it do that? Why does it make the errors that it does? And how can you build something better? Modern translation systems learn to translate by reading millions of words of already translated text, and this course will show you how they work. The course covers a diverse set of fundamental building blocks from linguistics, machine learning, algorithms, data structures, and formal language theory, along with their application to a real and difficult problem in artificial intelligence.
Prerequisites: EN.600.226 and prob/stat. Students may receive credit for only one of EN.600.468, EN.601.468, EN.601.668.
Instructor(s): P. Koehn
Area: Engineering.

EN.601.475. Machine Learning. 3.0 Credits.
Machine learning is subfield of computer science and artificial intelligence, whose goal is to develop computational systems, methods, and algorithms that can learn from data to improve their performance. This course introduces the foundational concepts of modern Machine Learning, including core principles, popular algorithms and modeling frameworks. This will include both supervised learning, which includes popular algorithms like SVMs, logistic regression, boosting and deep learning, as well as unsupervised learning frameworks, which include Expectation Maximization and graphical models. Homework assignments include a heavy programming components, requiring students to implement several machine learning algorithms in a common learning framework. Additionally, analytical homework questions will explore various machine learning concepts, building on the pre-requisites that include probability, linear algebra, multi-variate calculus and basic optimization. Students in the course will develop a learning system for a final project. [Applications or Analysis] Required course background: multivariable calculus, probability, linear algebra.
Prerequisites: EN.600.107 OR EN.600.120 OR EN.601.220 OR EN.600.226/EN.601.226 OR EN.580.200 OR EN.500.200 OR AS.250.205 OR EN.601.107 OR EN.500.112 OR AP Computer Science; Students may receive credit for only one of EN.600.475, EN.601.475, EN.601.675.
Instructor(s): M. Dredze
Area: Engineering.

EN.601.476. Machine Learning: Data to Models. 3.0 Credits.
How can robots localize themselves in an environment when navigating? Can we predict which patients are at greatest-risk for complications in the hospital? Which movie should I recommend to this user given his history of likes? Many such big data questions can be answered using the paradigm of probabilistic models in machine learning. These are especially useful when common off-the-shelf algorithms such as support vector machines and k-means fail. You will learn methods for clustering, classification, structured prediction, recommendation and inference. We will use Murphy’s book, Machine Learning: a Probabilistic Perspective, as the text for this course. Assignments are solved in groups of size 1-3 students. The class will have 4 interactive sessions during which we brainstorm how to solve example open-ended real-world problems with the tools learnt in class. Students are also required to do a project of their choice within which they experiment with the ideas learnt in class. [Analysis or Applications] Prerequisites include Intro Prob/Stat, Linear Algebra and Intro Machine Learning as well as strong background in s.
Instructor(s): S. Saria
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.477. Causal Inference. 3.0 Credits.
"Big data" is not necessarily "high quality data." Systematically missing records, unobserved confounders, and selection effects present in many datasets make it harder than ever to answer scientifically meaningful questions. This course will teach mathematical tools to help you reason about causes, effects, and bias sources in data with confidence. We will use graphical causal models, and potential outcomes to formalize what causal effects mean, describe how to express these effects as functions of observed data, and use regression model techniques to estimate them. We will consider techniques for handling missing values, structure learning algorithms for inferring causal directionality from data, and connections between causal inference and reinforcement learning. [Analysis] Pre-requisites: familiarity with the R programming language, multivariate calculus, basics of linear algebra and probability.
Prerequisites: EN.600.475 OR (EN.550.310 OR EN.550.420) AND AS.110.202 or permission of instructor; Students may receive credit for only one of EN.600.477, EN.600.677, EN.601.477, EN.601.677.
Instructor(s): I. Shpitser
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.479. Representation Learning. 3.0 Credits.
Often the success of a machine learning project depends on the choice of features used. Machine learning has made great progress in training classification, regression and recognition systems when "good" representations, or features, of input data are available. However, much human effort is spent on designing good features which are usually knowledge-based and engineered by domain experts over years of trial and error. A natural question to ask then is "Can we automate the learning of useful features from raw data?" Representation learning algorithms such as principal component analysis aim at discovering better representations of inputs by learning transformations of data that disentangle factors of variation in data while retaining most of the information. The success of such data-driven approaches to feature learning depends not only on how much data we can process but also on how well the features that we learn correlate with the underlying unknown labels (semantic content in the data). This course will focus on scalable machine learning approaches for learning representations from large amounts of unlabeled, multi-modal, and heterogeneous data. We will cover topics including deep learning, multi-view learning, dimensionality reduction, similarity-based learning, and spectral learning. Students may receive credit for 601.479 or 601.679 but not both. [Analysis or Applications] Required course background: machine learning or basic probability and linear algebra.
Prerequisites: If you have completed EN.600.679 you may not enroll in EN.601.479.
Instructor(s): R. Arora
Area: Engineering.
EN.601.481. Machine Learning: Optimization. 3.0 Credits.
Optimization is at the heart of machine learning. Most machine learning problems can be posed as optimization problems. However, unlike mathematical optimization where the focus is on efficient algorithms for finding solutions with a high degree of accuracy as measured by optimality conditions, optimization for machine learning focuses on algorithms that are efficient and generalize well. In this course, we will focus on optimization for problems that arise in machine learning, design and analysis of algorithms for solving these problems, and the interplay of optimization and machine learning. The coursework will include homework assignments and a final project focusing on applying optimization algorithms to real world machine learning problems. [Analysis or Applications]
Prerequisites: EN.601.473 OR (EN.553.310 OR (EN.553.420 AND EN.553.430 ) AND AS.110.201 AND AS.110.202 ); Students may receive credit for only one of EN.601.481/681.
Instructor(s): R. Arora
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.482. Machine Learning: Deep Learning. 3.0 Credits.
Deep learning (DL) has emerged as a powerful tool for solving data-intensive learning problems such as supervised learning for classification or regression, dimensionality reduction, and control. As such, it has a broad range of applications including speech and text understanding, computer vision, medical imaging, and perception-based robotics. The goal of this course is to introduce the basic concepts of deep learning (DL). The course will include a brief introduction to the basic theoretical and methodological underpinnings of machine learning, commonly used architectures for DL, DL optimization methods, DL programming systems, and specialized applications to computer vision, speech understanding, and robotics. Students will be expected to solve several DL problems on standardized data sets, and will be given the opportunity to pursue team projects on topics of their choice. [Applications] Students should also consider taking EN.601.382 Deep Learning Lab as a supplement. Students may choose to skip the lab course if they already have a strong programming background and are comfortable learning on their own using online resources and tutorials. Pre-req: (AS.110.201 or AS.110.212 or EN.553.291) and (EN.553.310 or EN.553.311 or EN.553.420; Calc III and numerical optimization recommended.
Prerequisites: (AS.110.201 OR AS.110.212 OR EN.553.291) AND (EN.553.310 OR EN.553.311 OR EN.553.420 OR EN.560.348); Calc III and numerical optimization recommended.
Instructor(s): G. Hager
Area: Engineering.

EN.601.485. Probabilistic Models of the Visual Cortex. 3.0 Credits.
The course gives an introduction to computational models of the mammalian visual cortex. It covers topics in low-, mid-, and high-level vision. It briefly discusses the relevant evidence from anatomy, electrophysiology, imaging (e.g., fMRI), and psychophysics. It concentrates on mathematical modelling of these phenomena taking into account recent progress in probabilistic models of computer vision and developments in machine learning, such as deep networks. [Applications or Analysis] Programming experience (Python preferred).
Prerequisites: AS.110.106 OR AS.110.108
Instructor(s): A. Yuille
Area: Quantitative and Mathematical Sciences.

EN.601.488. Foundations of Computational Biology & Bioinformatics II. 3.0 Credits.
This course will introduce probabilistic modeling and information theory applied to biological sequence analysis, focusing on statistical models of protein families, alignment algorithms, and models of evolution. Topics will include probability theory, score matrices, hidden Markov models, maximum likelihood, expectation maximization and dynamic programming algorithms. Homework assignments will require programming in Python. Foundations of Computational Biology I is not a prereq. [Analysis] Co-listed with EN.580.488. Recommended Course Background: math through linear algebra and differential equations, at least one prob/stat course, EN.580.221 or equivalent, EN.601.226 or equivalent.
Instructor(s): R. Karchin
Area: Engineering, Natural Sciences.

EN.601.490. Introduction to Human-Computer Interaction. 3.0 Credits.
This course is designed to introduce undergraduate and graduate students to design techniques and practices in human-computer interaction (HCI), the study of interactions between humans and computing systems. Students will learn design techniques and evaluation methods, as well as current practices and exploratory approaches, in HCI through lectures, readings, and assignments. Students will practice various design techniques and evaluation methods through hands-on projects focusing on different computing technologies and application domains. This course is intended for undergraduate and graduate students in Computer Science/Cognitive Science/Psychology. Interested students from different disciplines should contact the instructor before enrolling in this course. [Applications] Recommended Background: Basic programming skills.
Prerequisites: Students can receive credit for either EN.601.490 or EN.601.690, but not both.
Instructor(s): C. Huang
Area: Engineering.

EN.601.501. Computer Science Workshop. 1.0 - 3.0 Credits.
An applications-oriented, computer science project done under the supervision and with the sponsorship of a faculty member in the Department of Computer Science. Computer Science Workshop provides a student with an opportunity to apply theory and concepts of computer science to a significant project of mutual interest to the student and a Computer Science faculty member. Permission to enroll in CSW is granted by the faculty sponsor after his/her approval of a project proposal from the student. Interested students are advised to consult with Computer Science faculty members before preparing a Computer Science Workshop project proposal.
Instructor(s): D. Yarowsky; J. Selinski; M. Darvish Darab; S. Smith.

EN.601.503. Independent Study. 1.0 - 3.0 Credits.
Individual guided study for undergraduate students under the direction of a faculty member in the department. The program of study, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved. Permission required.
Instructor(s): Staff.

EN.601.507. Undergraduate Research. 1.0 - 3.0 Credits.
Individual research for undergraduates under the direction of a faculty member in the department. The program of research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved. Permission required.
Instructor(s): Staff.
EN.601.509. Computer Science Internship. 1.0 Credit.
Individual work in the field with a learning component, supervised by a faculty member in the department. The program of study and credit assigned must be worked out in advance between the student and the faculty member involved. Students may not receive credit for work that they are paid to do. As a rule of thumb, 40 hours of work is equivalent to one credit. Permission required.
Instructor(s): Staff.

EN.601.517. Group Undergraduate Research. 1.0 - 3.0 Credits.
Independent research for undergraduates under the direction of a faculty member in the department. This course has a weekly research group meeting that students are expected to attend. The program of research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved.
Instructor(s): Staff.

EN.601.519. Senior Honors Thesis. 3.0 Credits.
The student will undertake a substantial independent research project under the supervision of a faculty member, potentially leading to the notation "Departmental Honors with Thesis" on the final transcript. Students are expected to enroll in both semesters of this course during their senior year. Project proposals must be submitted and accepted in the preceding spring semester (junior year) before registration. Students will present their work publicly before April 1st of senior year. They will also submit a first draft of their project report (thesis document) at that time. Faculty will meet to decide if the thesis will be accepted for honors. Computer science majors only. Students should have a 3.5 GPA in computer science courses at the end of their junior year and permission of faculty sponsor.
Instructor(s): Staff.

EN.601.520. Senior Honors Thesis. 0.0 - 3.0 Credits.
For computer science majors only, a continuation of EN.601.519. Recommended Course Background: EN.601.519
Instructor(s): Staff.

EN.601.556. Senior Thesis In CIS. 3.0 Credits.
Prerequisites: EN.600.445 or permission of instructor.
Instructor(s): R. Taylor.

EN.601.618. Operating Systems. 3.0 Credits.
Topics include processor management, storage management, operating system components (e.g., file system, kernel), modeling and performance measurement, protection and security, and recent innovations in operating system structure. Course work includes the implementation of operating systems techniques and routines, and critical parts of a small but functional operating system. [Systems] Recommended Course Background: EN.601.226
Prerequisites: Students may receive credit for only one of EN.600.315, EN.600.415, EN.601.315, EN.601.415, EN.601.615.
Instructor(s): D. Yarowsky
Area: Engineering.

EN.601.619. Principles of Programming Languages. 3.0 Credits.
Same material as EN.601.419, for graduate students. Introduction to the design and implementation of programming languages, focusing on the use of language features in achieving programming goals. [Analysis] Students may receive credit for only one of EN.601.419, EN.601.619.
Instructor(s): S. Smith
Area: Engineering.
EN.601.433. Randomized and Big Data Algorithms. 3.0 Credits.
Same material as EN.601.434, for graduate students. This course concentrates on the design of algorithms and the rigorous analysis of their efficiency. Topics include the basic definitions of algorithmic complexity (worst case, average case); basic tools such as dynamic programming, sorting, searching, and selection; advanced data structures and their applications (such as union-find); graph algorithms and searching techniques such as minimum spanning trees, depth-first search, shortest paths, design of online algorithms and competitive analysis. [Analysis]
Prerequisites: Students may receive credit for only one of EN.600.363, EN.600.463, EN.601.433, EN.601.633.
Instructor(s): M. Dinitz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.441. Blockchain and Cryptocurrencies. 3.0 Credits.
Same as EN.601.441, for graduate students. This course will introduce students to cryptocurrencies and the main underlying technology of Blockchains. The course will start with the relevant background in cryptography and then proceed to cover the recent advances in the design and applications of blockchains. This course should primarily appeal to students who want to conduct research in this area or wish to build new applications on top of blockchains. It should also appeal to those who have a casual interest in this topic or are generally interested in cryptography. Students are expected to have mathematical maturity. [Analysis]
Prerequisites: Students may receive credit for only one of EN.600.451 OR EN.601.441 OR EN.601.641; EN.601.226 AND (EN.553.310 OR EN.553.420)
Instructor(s): A. Jain
Area: Engineering.

EN.601.442. Modern Cryptography. 3.0 Credits.
Same material as EN.601.442, for graduate students. Modern Cryptography includes seemingly paradoxical notions such as communicating privately without a shared secret, proving things without leaking knowledge, and computing on encrypted data. In this challenging but rewarding course we will start from the basics of private and public key cryptography and go all the way up to advanced notions such as zero-knowledge proofs, functional encryption and program obfuscation. The class will focus on rigorous proofs and require mathematical maturity. [Analysis] Required course background: EN.601.231 or EN.601.631.
Prerequisites: Students may receive credit for only one of EN.600.442, EN.601.442, EN.601.642.
Instructor(s): A. Jain
Area: Engineering, Quantitative and Mathematical Sciences.
EN.601.644. Network Security. 3.0 Credits.
Same material as 601.444, for graduate students. This course focuses on communication security in computer systems and networks. The course is intended to provide students with an introduction to the field of network security. The course covers network security services such as authentication and access control, integrity and confidentiality of data, firewalls and related technologies, Web security and privacy. Course work involves implementing various security techniques. A course project is required. [Systems] Recommended. Course Background: EN.601.220, EN.601.226 or equivalent
Prerequisites: Students may receive credit for only one of EN.600.424, EN.650.424, EN.601.444, EN.601.644.
Instructor(s): S. Nielson
Area: Engineering.

EN.601.645. Practical Cryptographic Systems. 3.0 Credits.
Same material as 601.445, for graduate students. This semester-long course will teach systems and cryptographic design principles by example: by studying and identifying flaws in widely-deployed cryptographic products and protocols. Our focus will be on the techniques used in practical security systems, the mistakes that lead to failure, and the approaches that might have avoided the problem. We will place a particular emphasis on the techniques of provable security and the feasibility of reverse-engineering undocumented cryptographic systems. [Systems]
Prerequisites: Students may receive credit for only one of EN.600.454, EN.650.454, EN.601.445, EN.601.645.
Instructor(s): M. Green
Area: Engineering.

EN.601.646. Computational Genomics: Sequences. 3.0 Credits.
Same material as 601.447, for graduate students. Your genome is the blueprint for the molecules in your body. It's also a string of letters (A, C, G and T) about 3 billion letters long. How does this string give rise to you? Your heart, your brain, your health? This, broadly speaking, is what genomics research is about. This course will familiarize you with a breadth of topics from the field of computational genomics. The emphasis is on current research problems, real-world genomics data, and efficient software implementations for analyzing data. Topics will include: string matching, sequence alignment and indexing, assembly, and sequence models. Course will involve significant programming projects. [Applications] Recommended Course Background: EN.601.220 and EN.601.226
Prerequisites: Students may receive credit for only one of EN.600.439, EN.600.639, EN.601.447, EN.601.647.
Instructor(s): B. Langmead
Area: Engineering.

EN.601.654. Augmented Reality. 3.0 Credits.
This course introduces students to the field of Augmented Reality. It reviews its basic definitions, principles and applications. It then focuses on Medical Augmented Reality and its particular requirements. The course also discusses the main issues of calibration, tracking, multimodal registration, advance visualization and display technologies. Homework in this course will relate to the mathematical methods used for calibration, tracking and visualization in medical augmented reality. Students may also be asked to read papers and implement various techniques within group projects. Recommended Course Background: EN.601.220, EN.601.226, and AS.110.201. [Applications]
Prerequisites: Students may receive credit for only one of EN.600.484, EN.600.684, EN.601.454, EN.601.654.
Instructor(s): N. Navab.

EN.601.655. Computer Integrated Surgery I. 4.0 Credits.
Same material as 601.455, for graduate students. This course focuses on computer-based techniques, systems, and applications exploiting quantitative information from medical images and sensors to assist clinicians in all phases of treatment from diagnosis to preoperative planning, execution, and follow-up. It emphasizes the relationship between problem definition, computer-based technology, and clinical application and includes a number of guest lectures given by surgeons and other experts on requirements and opportunities in particular clinical areas. [Applications] Recommended Course Background: intermediate programming in C/C++, EN.601.457, EN.601.461, image processing.
Prerequisites: Students may receive credit for only one of EN.600.445, EN.600.645, EN.601.455, EN.601.655.
Instructor(s): R. Taylor
Area: Engineering.

EN.601.656. Computer Integrated Surgery II. 3.0 Credits.
Same material as EN.601.456, for graduate students. This weekly lecture/seminar course addresses similar material to EN.601.445, but covers selected topics in greater depth. In addition to material covered in lectures/seminars by the instructor and other faculty, students are expected to read and provide critical analysis/presentations of selected papers in recitation sessions. Students taking this course are required to undertake and report on a significant term project under the supervision of the instructor and clinical end users. Typically, this project is an extension of the term project from EN.601.445, although it does not have to be. Grades are based both on the project and on classroom recitations. Students wishing to attend the weekly lectures as a 1-credit seminar should sign up for EN.600.452. [Applications]
Prerequisites: EN.600.445 OR EN.600.645 OR PERMISSION OF INSTRUCTOR, Students may receive credit for only one of EN.600.446, EN.600.646, EN.601.456, EN.601.656.
Instructor(s): R. Taylor.

EN.601.657. Computer Graphics. 3.0 Credits.
Same material as 601.457, for graduate students. This course introduces computer graphics techniques and applications, including image processing, rendering, modeling and animation. [Applications] Permission of instructor is required for students not satisfying a pre-requisite. Required course background: EN.601.220 (C++), EN.601.226, linear algebra.
Prerequisites: Students may receive credit for only one of EN.600.357, EN.600.457, EN.601.457, EN.601.657.
Instructor(s): M. Kazhdan
Area: Engineering, Quantitative and Mathematical Sciences.
EN.601.658. Introduction to Geometry Processing. 2.0 Credits.
In this course we will look at fundamental techniques in geometry processing, including smoothing / sharpening, parameterization, and (if time allows) vector fields. The course will begin with a review of the discretization of the underlying concepts from differential geometry (e.g., normals, curvature, Laplacian) before proceeding to specific applications. 
Prerequisites: EN.600.357 AND EN.600.457
Instructor(s): F. Prada Nino; M. Kazhdan.

EN.601.661. Computer Vision. 3.0 Credits.
Same material as 601.461, for graduate students. Students may receive credit for at most one of 601.461/661/761. This course gives an overview of fundamental methods in computer vision from a computational perspective. Methods studied include: camera systems and their modeling, computation of 3-D geometry from binocular stereo, motion, and photometric stereo; and object recognition. Edge detection and color perception are covered as well. Elements of machine vision and biological vision are also included. [Applications] Recommended Course Background: intro programming, linear algebra, prob/stat.
Prerequisites: Students may receive credit for only one of EN.600.361, EN.600.461, EN.600.661, EN.601.461, EN.601.661.
Instructor(s): H. Ali
Area: Engineering.

EN.601.663. Algorithms for Sensor-Based Robotics. 3.0 Credits.
Same material as EN.601.463, for graduate students. This course surveys the development of robotic systems for navigating in an environment from an algorithmic perspective. It will cover basic kinematics, configuration space concepts, motion planning, and localization and mapping. It will describe these concepts in the context of the ROS software system, and will present examples relevant to mobile platforms, manipulation, robotics surgery, and human-machine systems. [Analysis] Recommended Course Background: EN.600.226 and Linear Algebra and Probability
Prerequisites: Students may receive credit for only one of EN.600.336, EN.600.436, EN.600.636, EN.601.463, EN.601.663.
Instructor(s): S. Leonard
Area: Engineering.

EN.601.664. Artificial Intelligence. 3.0 Credits.
Same material as EN.601.464, for graduate students. The class is recommended for all scientists and engineers with a genuine curiosity about the fundamental obstacles to getting machines to perform tasks such as learning, planning and prediction. Materials will be primarily based on the popular textbook, Artificial Intelligence: A Modern Approach. Strong programming skills are expected, as well as basic familiarity with probability. For students intending to also take courses in Machine Learning (e.g., EN.601.475/675, EN.601.476/676), they may find it beneficial to take this course first, or concurrently. [Applications] Prereq: EN.600.226; Recommended: linear algebra, prob/stat.
Prerequisites: Students may receive credit for only one of EN.600.335, EN.600.435, EN.601.464, EN.601.664.
Instructor(s): B. Van Durme
Area: Engineering.

EN.601.665. Natural Language Processing. 4.0 Credits.
Same material as 601.465, for graduate students. This course is an in-depth overview of techniques for processing human language. How should linguistic structure and meaning be represented? What algorithms can recover them from text? And crucially, how can we build statistical models to choose among the many legal answers? The course covers methods for trees (parsing and semantic interpretation), sequences (finite-state transduction such as morphology), and words (sense and phrase induction), with applications to practical engineering tasks such as information retrieval and extraction, text classification, part-of-speech tagging, speech recognition and machine translation. There are a number of structured but challenging programming assignments. [Applications] Recommended Course Background: EN.601.226
Prerequisites: Students may receive credit for only one of EN.600.465, EN.601.465, EN.601.665.
Instructor(s): J. Eisner
Area: Engineering.

EN.601.666. Information Retrieval and Web Agents. 3.0 Credits.
Same material as EN.601.466, for graduate students. An in-depth, hands-on study of current information retrieval techniques and their application to developing intelligent WWW agents. Topics include a comprehensive study of current document retrieval models, mail/news routing and filtering, document clustering, automatic indexing, query expansion, relevance feedback, user modeling, information visualization and usage pattern analysis. In addition, the course explores the range of additional language processing steps useful for template filling and information extraction from retrieved documents, focusing on recent, primarily statistical methods. The course concludes with a study of current issues in information retrieval and data mining on the World Wide Web. Topics include web robots, spiders, agents and search engines, exploring both their practical implementation and the economic and legal issues surrounding their use. [Applications] 
Instructor(s): D. Yarowsky
Area: Engineering.

EN.601.668. Machine Translation. 3.0 Credits.
Same material as 601.468, for graduate students. Google translate can instantly translate between any pair of over fifty human languages (for instance, from French to English). How does it do that? Why does it make the errors that it does? And how can you build something better? Modern translation systems learn to translate by reading millions of words of already translated text, and this course will show you how they work. The course covers a diverse set of fundamental building blocks from linguistics, machine learning, algorithms, data structures, and formal language theory, along with their application to a real and difficult problem in artificial intelligence. [Applications] Recommended Course Background: prob/stat, EN.601.226, EN.601.645
Prerequisites: Students may receive credit for only one of EN.600.468, EN.601.468, EN.601.668.
Instructor(s): P. Koehn
Area: Engineering.
EN.601.475. Machine Learning. 3.0 Credits.
Same material as 601.475, for graduate students. Machine learning is a subfield of computer science and artificial intelligence, whose goal is to develop computational systems, methods, and algorithms that can learn from data to improve their performance. This course introduces the foundational concepts of modern Machine Learning, including core principles, popular algorithms and modeling frameworks. This will include both supervised learning, which includes popular algorithms like SVMs, logistic regression, boosting and deep learning, as well as unsupervised learning frameworks, which include Expectation Maximization and graphical models. Homework assignments include a heavy programming component, requiring students to implement several machine learning algorithms in a common learning framework. Additionally, analytical homework questions will explore various machine learning concepts, building on the pre-requisites that include probability, linear algebra, multi-variate calculus and basic optimization. Students in the course will be given the opportunity to pursue scientific meaningful questions. This course will teach mathematical tools to help you reason about causes, effects, and bias sources in data with confidence. We will use graphical causal models, and potential outcomes to formalize what causal effects mean, describe how to express these effects as functions of observed data, and use regression model techniques to estimate them. We will consider techniques for handling missing values, structure learning algorithms for inferring causal directionality from data, and connections between causal inference and reinforcement learning. [Analysis] Pre-requisites: familiarity with the R programming language, multivariate calculus, basics of linear algebra and probability.
Prerequisites: Students may receive credit for only one of EN.600.475, EN.601.475, EN.601.675.
Instructor(s): M. Dredze
Area: Engineering.

EN.601.677. Causal Inference. 3.0 Credits.
"Big data" is not necessarily "high quality data." Systematically missing records, unobserved confounders, and selection effects present in many datasets make it harder than ever to answer scientifically meaningful questions. This course will teach mathematical tools to help you reason about causes, effects, and bias sources in data with confidence. We will use graphical causal models, and potential outcomes to formalize what causal effects mean, describe how to express these effects as functions of observed data, and use regression model techniques to estimate them. We will consider techniques for handling missing values, structure learning algorithms for inferring causal directionality from data, and connections between causal inference and reinforcement learning. [Analysis] Pre-requisites: familiarity with the R programming language, multivariate calculus, basics of linear algebra and probability.
Prerequisites: Students may receive credit for only one of EN.600.477, EN.600.677, EN.601.477, EN.601.677.
Instructor(s): I. Shpitser
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.679. Representation Learning. 3.0 Credits.
Graduate level version of 601.479. Students may receive credit for 601.479 or 601.679 but not both. [Analysis or Applications] Required course background: machine learning or basic probability and linear algebra. Co-listed with EN.601.479
Prerequisites: If you have completed EN.600.479 you may not enroll in EN.600.679.
Instructor(s): R. Arora.

EN.601.681. Machine Learning: Optimization. 3.0 Credits.
Same material as EN.601.481, for graduate students. Optimization is at the heart of machine learning. Most machine learning problems can be posed as optimization problems. However, unlike mathematical optimization where the focus is on efficient algorithms for finding solutions with a high degree of accuracy as measured by optimality conditions, optimization for machine learning focuses on algorithms that are efficient and generalize well. In this course, we will focus on optimization for problems that arise in machine learning, design and analysis of algorithms for solving these problems, and the interplay of optimization and machine learning. The coursework will include homework assignments and a final project focusing on applying optimization algorithms to real world machine learning problems. [Analysis or Applications] Recommended Course Background: EN.601.475 OR ( EN.553.310 OR ( EN.553.420 AND EN.553.430 ) AND AS.110.201 AND AS.110.202 )
Prerequisites: Students may receive credit for only one of EN.601.481/681
Instructor(s): R. Arora.

EN.601.682. Machine Learning: Deep Learning. 3.0 Credits.
Deep learning (DL) has emerged as a powerful tool for solving data-intensive learning problems such as supervised learning for classification or regression, dimensionality reduction and control. As such, it has a broad range of applications including speech and text understanding, computer vision, medical imaging, and perception-based robotics. The goal of this course is to introduce the basic concepts of deep learning (DL). The course will include a brief introduction to the basic theoretical and methodological underpinnings of machine learning, commonly used architectures for DL, DL optimization methods, DL programming systems, and specialized applications to computer vision, speech understanding, and robotics. Students will be expected to solve several DL problems on standardized data sets, and will be given the opportunity to pursue team projects on topics of their choice. [Applications] Students should also consider taking EN.601.382 Deep Learning Lab as a supplement. Students may choose to skip the lab course if they already have a strong programming background and are comfortable learning on their own using online resources and tutorials. Recommended Course Background: (AS.110.201 or AS.110.212 or EN.553.291) and (EN.553.310 EN.553.311 or EN.553.420); numerical optimization recommended.
Instructor(s): G. Hager
Area: Engineering.

EN.601.690. Introduction to Human-Computer Interaction. 3.0 Credits.
This course is designed to introduce undergraduate and graduate students to design techniques and practices in human-computer interaction (HCI), the study of interactions between humans and computing systems. Students will learn design techniques and evaluation methods, as well as current practices and exploratory approaches, in HCI through lectures, readings, and assignments. Students will practice various design techniques and evaluation methods through hands-on projects focusing on different computing technologies and application domains. This course is intended for undergraduate and graduate students in Computer Science/Cognitive Science/Psychology. Interested students from different disciplines should contact the instructor before enrolling in this course. [Applications] Recommended Background: Basic programming skills.
Prerequisites: Students can receive credit for either EN.601.490 or EN.601.690, but not both.
Instructor(s): C. Huang
Area: Engineering.
EN.601.691. Human-Robot Interaction. 3.0 Credits.
This course is designed to introduce graduate students to research methods and topics in human-robot interaction (HRI), an emerging research area focusing on the design and evaluation of interactions between humans and robotic technologies. Students will (1) learn design principles for building and research methods of evaluating interactive robot systems through lectures, readings, and assignments, (2) read and discuss relevant literature to gain sufficient knowledge of various research topics in HRI, and (3) work on a substantial project that integrates the principles, methods, and knowledge learned in this course. [Applications] Required course background: EN.601.220 and EN.601.226. Instructor(s): P. Huang.

EN.601.714. Advanced Computer Networks. 3.0 Credits.
This is a graduate-level course on computer networks. It provides a comprehensive overview on advanced topics in network protocols and networked systems. The course will cover both classic papers on Internet protocols and recent research results. It will examine a wide range of topics, e.g., routing, congestion control, network architectures, datacenter networks, network virtualization, software-defined networking, and programmable networks, with an emphasize on core networking concepts and principles. The course will include lectures, paper discussions, programming assignments and a research project. Recommended Course Background: One undergraduate course in computer networks (e.g., EN.601.414/614 Computer Network Fundamentals or the equivalent), or permission of the instructor. The course assignments and projects assume students to be comfortable with programming. Instructor(s): S. Ghorbani Khaledi.

EN.601.717. Advanced Distributed Systems & Networks. 3.0 Credits.
The course explores the state of the art in distributed systems, networks and Internet research and practice, trying to see what it would take to push the envelop a step further. The course is conducted as a discussion group, where the professor and students brainstorm and pick interesting semester-long projects with high potential future impact. Example areas include robust scalable infrastructure (distributed datacenters, cloud networking, scada systems), real-time performance (remote surgery, trading systems), hybrid networks (mesh networks, 3G/4G/Wifi/Bluetooth). Students should feel free to bring their own topics of interest and ideas. Recommended Course Background: a systems course (distributed systems, operating systems, computer networks, parallel programming) or permission of instructor. Instructor(s): Y. Amir.

EN.601.718. Advanced Operating Systems. 3.0 Credits.
Students will study advanced operating systems topics and be exposed to recent developments in operating systems research. This course involves readings on classic and new papers. Topics include virtual memory management, synchronization and communication, file systems, protection and security, operating system structure and extension techniques, fault tolerance, and history and experience of systems programming. [Systems] Prerequisites: EN.600.318 OR EN.600.418 OR EN.601.318 OR EN.601.418 OR EN.601.618
Instructor(s): P. Huang.

EN.601.723. Advanced Topics in Data-Intensive Computing. 3.0 Credits.
The advent of cloud computing has lead to an explosion of storage system and data analysis software, including NoSQL databases, bulk-synchronous processing, graph computing engines, and stream processing. This course will explore scale-out software architectures for data-processing tasks. It will examine the algorithms and data-structures that underlie scalable systems and look at how hardware and networking trends influence the design and deployment of cloud computing. Recommended Course Background: EN.601.320/420 or permission of instructor. [Systems] Prerequisites: EN.600.320 OR EN.600.420 OR EN.601.620
Instructor(s): R. Burns.

EN.601.730. Pseudorandomness and Combinatorial Constructions. 3.0 Credits.
Randomness is very useful in almost all areas of computer science, such as algorithms, distributed computing and cryptography. However, computers generally do not have access to truly random bits. To deal with this, we rely on various pseudorandom objects to reduce either the quantity or the quality of the random bits needed. In this course, we will develop provably good pseudorandom objects for a variety of tasks. We will frequently require explicit combinatorial constructions. That is, we will want to efficiently and deterministically construct such objects. Along the way, we will also explore the close connections of such objects to many other areas in computer science and mathematics, such as graph theory, coding theory, complexity theory and arithmetic combinatorics. [Analysis] Recommended course background: EN.601.231 or EN.601.631, and probability.
Instructor(s): X. Li.

EN.601.743. Advanced Topics in Computer Security. 3.0 Credits.
Topics will vary from year to year, but will focus mainly on network perimeter protection, host-level protection, authentication technologies, intellectual property protection, formal analysis techniques, intrusion detection and similarly advanced subjects. Emphasis in this course is on understanding how security issues impact real systems, while maintaining an appreciation for grounding the work in fundamental science. Students will study and present various advanced research papers to the class. There will be homework assignments and a course project.
Instructor(s): A. Rubin.

EN.601.745. Advanced Topics in Applied Cryptography. 3.0 Credits.
This reading and project based course will explore the latest research in the area of applied cryptography and cryptographic engineering. Topics covered will include zero knowledge, efficient multiparty computation, cryptocurrencies, and trusted computing hardware. Readings will be drawn from the latest applied cryptography and security conferences. The course will include both reading, critical analysis, presentations and a course programming project. [Analysis or Applications] Prerequisites: EN.600.454 OR EN.601.445 OR EN.600.442 OR EN.601.442 OR EN.601.642
Instructor(s): M. Green.

EN.601.748. Computational Genomics: Data Analysis. 3.0 Credits.
Graduate level version of EN.601.448. [Applications] Recommended Course Background: EN.601.226 or other programming experience, probability and statistics, linear algebra or calculus. Students may receive credit for EN.601.448 or EN.601.748 but not both. Prerequisites: Students may receive credit for EN.600.438 or EN.600.638, but not both.
Instructor(s): A. Battle
Area: Engineering.
EN.601.749. Computational Genomics: Applied Comparative Genomics. 3.0 Credits.
The goal of this course is to study the leading computational and quantitative approaches for comparing and analyzing genomes starting from raw sequencing data. The course will focus on human genomics and human medical applications, but the techniques will be broadly applicable across the tree of life. The topics will include genome assembly & comparative genomics, variant identification & analysis, gene expression & regulation, personal genome analysis, and cancer genomics. The grading will be based on assignments, a midterm & final exam, class presentations, and a significant class project. [Applications] Expected course background: familiarity with UNIX scripting and/or programming. Instructor(s): M. Schatz.

EN.601.750. Frontiers of Sequencing Data Analysis. 3.0 Credits.
Public archives now contain petabytes of valuable but hard-to-analyze DNA sequencing data. Analyzing even small datasets is complicated by sequencing errors, differences between individuals, and the fragmentary nature of the sequencing reads. In this course, we study recent algorithms and methods that seek to make sense of DNA sequencing datasets from small to very large. Topics covered will vary from year to year, but could include RNA sequencing data analysis, other functional genomics data analysis, metagenomics analysis, data compression, indexing, applications of streaming algorithms and sketch data structures, assembly, etc. There will be homework assignments and a course project. [Applications] Instructor(s): B. Langmead.

EN.601.751. Advanced Topics in Genomic Data Analysis. 3.0 Credits.
New Description: Genomic data is becoming available in large quantities, but understanding how genetics contributes to human disease and other traits remains a major challenge. Machine learning and statistical approaches allow us to automatically analyze and combine genomics data, build predictive models, and identify genetic elements important to disease and cellular processes. This course will cover current uses of statistical methods and machine learning in diverse genomic applications including new genomic technologies. Students will present and discuss current literature. Topics include personal genomics, integrating diverse genomic data types, new technologies such as single cell sequencing and CRISPR, and other topics guided by student interest. The course will include a project component with the opportunity to explore publicly available genomic data. [Applications] Recommended Course Background: coursework in data science or machine learning. Instructor(s): A. Battle.

EN.601.760. FFT in Graphics & Vision. 3.0 Credits.
In this course, we will study the Fourier Transform from the perspective of representation theory. We will begin by considering the standard transform defined by the commutative group of rotations in 2D and translations in two- and three-dimensions, and will proceed to the Fourier Transform of the non-commutative group of 3D rotations. Subjects covered will include correlation of images, shape matching, computation of invariances, and symmetry detection. Recommended Course Background: AS.110.201 and comfort with mathematical derivations. Instructor(s): M. Kazhdan.

EN.601.761. Advanced Computer Vision. 3.0 Credits.
Similar material as 601.461/661, covered in more depth. [Applications] Recommended Course Background: intro programming, linear algebra, prob/stat. Prerequisites: Students may receive credit for only one of the following: EN.600.461/EN.601.461, EN.600.661/EN.601.661, or EN.601.761. Instructor(s): A. Reiter Area: Engineering.
EN.601.775. **Statistical Machine Learning. 3.0 Credits.**
This is a second graduate level course in machine learning. It will provide a formal and an in-depth coverage of topics at the interface of statistical theory and computational sciences. We will revisit popular machine learning algorithms and understand their performance in terms of the size of the data (sample complexity), memory needed (space complexity), as well as the overall computational runtime (computation or iteration complexity). We will cover topics including nonparametric methods, kernel methods, online learning and reinforcement learning, as well as introduce students to current topics in large-scale machine-learning and randomized projections. Topics will vary from year-to-year but the general focus would be on combining methodology with theoretical and computational foundations. [Analysis or Applications]
Instructor(s): R. Arora.

EN.601.776. **Machine Learning: Data to Models. 3.0 Credits.**
Students in the class will be asked to do assignments in Matlab. Matlab is typically easy to pick up if one is already familiar with a different programming language. Students are expected to be mathematically mature. One should have taken at least an introductory course in probability theory and linear algebra. Though not required, exposure to optimization or machine learning is recommended. Proficiency in at least one programming language is expected. When in doubt, send the instructor a copy of your transcript to see if the class is appropriate for you. Also, sit through the first few sessions and first homework to get a sense of fit. Requisites include Intro Prob/Stat, Linear Algebra and Intro Machine Learning as well as strong background in s.
Instructor(s): S. Saria.

EN.601.777. **Advanced Topics in Causal Inference. 3.0 Credits.**
This course will cover advanced topics on all areas of causal inference, including learning causal effects, path-specific effects, and optimal policies from data featuring biases induced by missing data, confounders, selection, and measurement error; techniques for generalizing findings to different populations, complex probabilistic models relevant for causal inference applications, learning causal structure from data, and inference under interference and network effects. The course will feature a final project which would involve either an applied data analysis problem (with a causal inference flavor), a literature review, or theoretical work. [Analysis] Pre-requisite: EN.600.477/677 or permission.
Prerequisites: EN.600.477 OR EN.600.677
Instructor(s): I. Shpitser.

EN.601.779. **Machine Learning: Advanced Topics. 3.0 Credits.**
This course will focus on recent advances in machine learning. Topics will vary from year to year. The course will be project focused and involve presenting and discussing recent research papers.
Prerequisites: EN.600.475/EN.601.475 or EN.600.675/EN.601.675 or EN.600.775/EN.601.775 or EN.600.479/EN.601.479 or EN.600.679/EN.601.679 or EN.600.476/EN.601.476 or EN.600.676/EN.601.676 or permission.
Instructor(s): R. Arora.

EN.601.780. **Unsupervised Learning: From Big Data to Low-Dimensional Representations. 3.0 Credits.**
In the era of data deluge, the development of methods for discovering structure in high-dimensional data is becoming increasingly important. This course will cover state-of-the-art methods from algebraic geometry, sparse and low-rank representations, and statistical learning for modeling and clustering high-dimensional data. The first part of the course will cover methods for modeling data with a single low-dimensional subspace, such as PCA, Robust PCA, Kernel PCA, and manifold learning techniques. The second part of the course will cover methods for modeling data with multiple subspaces, such as algebraic, statistical, sparse and low-rank subspace clustering techniques. The third part of the course will cover applications of these methods in image processing, computer vision, and biomedical imaging. Requisites include Linear Algebra, Optimization, and prior exposure to Machine I.
Instructor(s): R. Vidal.

EN.601.782. **Deep Learning for Image Understanding. 3.0 Credits.**
This course discusses advanced topics on the recent progresses using deep learning, specifically deep convolutional neural networks in computer vision and medical image analysis. Topics will be selected from most recent papers from CVPR/ICCV/ArXiv/NIPS/MICCAI, with the core focus on object/scene recognition, object detection, domain transfer learning and computer-aided diagnosis. This course is targeted toward graduate students who are interested in mastering the understanding of the recent massive amount of literature and applying the skills to a course project (with lectures, paper reading, in-class presentation & discussion and a final research project). [Applications]
Prerequisites: Prereq: EN.600.461 OR EN.600.661
Instructor(s): L. Lu.

EN.601.783. **Vision as Bayesian Inference. 3.0 Credits.**
This is an advanced course on computer vision from a probabilistic and machine learning perspective. It covers techniques such as linear and non-linear filtering, geometry, energy function methods, markov random fields, conditional random fields, graphical models, probabilistic grammars, and deep neural networks. These are illustrated on a set of vision problems ranging from image segmentation, semantic segmentation, depth estimation, object recognition, object parsing, scene parsing, action recognition, and text captioning. [Analysis or Applications] Required course background: calculus, linear algebra (AS.110.201 or equiv.), probability and statistics (AS.553.311 or equiv.), and the ability to program in Python and C++. Background in computer vision (EN.601.461/661) and machine learning (EN.601.475) suggested but not required.
Instructor(s): A. Yuille.

EN.601.801. **Computer Science Seminar. 1.0 Credit.**
Required for all full-time CS PhD students. Recommended for MSE students.
Instructor(s): S. Smith.

EN.601.803. **Masters Research. 3.0 - 10.0 Credits.**
Permission required. Independent research for masters or pre-dissertation PhD students.
Instructor(s): Staff.

EN.601.805. **Graduate Independent Study. 1.0 - 3.0 Credits.**
Permission required. Individual study in an area of mutual interest to a graduate student and a faculty member in the department.
Instructor(s): Staff.
EN.601.807. Teaching Practicum. 1.0 Credit.
PhD students will gain valuable teaching experience, working closely with their assigned faculty supervisor. Successful completion of this course fulfills the PhD teaching requirement. (Grad students) Permission req'd.
Instructor(s): J. Selinski; M. Schatz; S. Smith.

EN.601.808. Selected Topics in CS Education.
This course will explore current issues and research in computer science education. Topics will be drawn from literature, news items, and participant experience. Current faculty and students with interests in academic careers are encouraged to attend.
Instructor(s): J. Selinski.

EN.601.809. PhD Research. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.601.817. Selected Topics in Systems Research. 1.0 Credit.
This course covers latest advances in the research of computer systems including operating systems, distributed system, mobile and cloud computing. Students will read and discuss recent research papers in top systems conferences. Each week, one student will present the paper and lead the discussion for the week. The focus topics covered in the papers vary semester to semester. Example topics include fault-tolerance, reliability, verification, energy efficiency, and virtualization.
Instructor(s): P. Huang.

EN.601.826. Selected Topics in Programming Languages. 1.0 Credit.
This seminar course covers recent developments in the foundations of programming language design and implementation. Topics covered include type theory, process algebra, higher-order program analysis, and constraint systems. Students will be expected to present papers orally.
Instructor(s): S. Smith.

EN.601.831. CS Theory Seminar. 1.0 Credit.
Seminar series in theoretical computer science. Topics include algorithms, complexity theory, and related areas of TCS. Speakers will be a mix of internal and external researchers, mostly presenting recently published research papers.
Instructor(s): M. Dinitz; X. Li.

EN.601.833. Seminar in Algorithms. 1.0 Credit.
This course will explore algorithms and theoretical computer science with a focus on algorithms for massive data. Examples of topics include streaming algorithms, approximation algorithms, online algorithms. Students will be encouraged to select a paper and lead a discussion. External speakers will be invited to present current work as well. This course is a good opportunity for motivated students to learn modern algorithmic methods. Recommended Course Background: EN.601.433 or equivalent.
Instructor(s): V. Braverman
Area: Engineering.

EN.601.845. Selected Topics in Applied Cryptography. 1.0 Credit.
In this course students will read, discuss and present current research papers in applied cryptography. Topic coverage will vary each semester. Instructor approval required.
Instructor(s): M. Green.

EN.601.850. Selected Topics in Computational Genomics. 1.0 Credit.
This course will survey current areas where computer science approaches have been applied to genomics research. Chiefly, the course focuses on DNA sequencing data analysis, including sequence alignment, de novo assembly, error correction, and DNA data compression. Subject matter will be partially guided by student interests. Students will present papers orally.
Instructor(s): B. Langmead.

EN.601.856. Seminar: Medical Image Analysis. 1.0 Credit.
This weekly seminar will focus on research issues in medical image analysis, including image segmentation, registration, statistical modeling, and applications. It will also include selected topics relating to medical image acquisition, especially where they relate to analysis. The purpose of the course is to provide the participants with a thorough background in current research in these areas, as well as to promote greater awareness and interaction between multiple research groups within the University. The format of the course is informal. Students will read selected papers. All students will be assumed to have read these papers by the time the paper is scheduled for discussion. But individual students will be assigned on a rotating basis to lead the discussion on particular papers or sections of papers. Co-listed with En.520.746.
Instructor(s): J. Prince; R. Taylor.

EN.601.857. Selected Topics in Computer Graphics. 1.0 Credit.
In this course we will review current research in computer graphics. We will meet for an hour once a week and one of the participants will lead the discussion for the week.
Instructor(s): M. Kazhdan.

EN.601.865. Selected Topics in Natural Language Processing. 1.0 Credit.
A reading group exploring important current research in the field and potentially relevant material from related fields. Enrolled students are expected to present papers and lead discussion.
Prerequisites: EN.600.465 OR EN.601.665 or permission of instructor
Instructor(s): J. Eisner.

EN.601.866. Selected Topics in Computational Semantics. 1.0 Credit.
This weekly reading group will review current research and survey articles on the topics of computational semantics, statistical machine translation, and natural language generation. Enrolled students will present papers and lead discussions.
Instructor(s): B. Van Durme.

EN.601.868. Selected Topics in Machine Translation. 1.0 Credit.
Students in this course will review, present, and discuss current research in machine translation. Permission of instructor.
Instructor(s): P. Koehn.

EN.601.875. Selected Topics in Machine Learning. 1.0 Credit.
This seminar is recommended for all students interested in data intensive computing research areas (e.g., machine learning, computer vision, natural language processing, speech, computational social science). The meeting format is participatory. Papers that discuss best practices and the state-of-the-art across application areas of machine learning and data intensive computing will be read. Student volunteers lead individual meetings. Faculty and external speakers present from time-to-time. Recommended Course Background: machine learning or permission of the instructor.
Instructor(s): R. Arora.

Cross Listed Courses

Cognitive Science

AS.050.375. Probabilistic Models of the Visual Cortex. 3.0 Credits.
The course gives an introduction to computational models of the mammalian visual cortex. It covers topics in low-, mid-, and high-level vision. It briefly discusses the relevant evidence from anatomy, electrophysiology, imaging (e.g., fMRI), and psychophysics. It concentrates on mathematical modeling of these phenomena taking into account recent progress in probabilistic models of computer vision and developments in machine learning, such as deep networks.
Prerequisites: AS.110.106 OR AS.110.108
Instructor(s): A. Yuille
Area: Quantitative and Mathematical Sciences.
The course gives an introduction to computational models of the mammalian visual cortex. It covers topics in low-, mid-, and high-level vision. It briefly discusses the relevant evidence from anatomy, electrophysiology, imaging (e.g., fMRI), and psychophysics. It concentrates on mathematical modelling of these phenomena taking into account recent progress in probabilistic models of computer vision and developments in machine learning, such as deep networks. Also offered as AS.050.375. Co-listed with Computer Science as EN.601.485.
Instructor(s): A. Yuille.

AS.050.814. Research Seminar in Computer Vision.
This course covers advanced topics in computational vision. It discusses and reviews recent progress and technical advances in visual topics such as object recognition, scene understanding, and image parsing.
Instructor(s): A. Yuille.

Physics Astronomy
AS.171.205. Introduction to Practical Data Science: Beautiful Data. 3.0 Credits.
The class will provide an overview of data science, with an introduction to basic statistical principles, databases, fundamentals of algorithms and data structures, followed by practical problems in data analytics. Recommend Course Background: Familiarity with principles of computing.
Instructor(s): S. Szalay
Area: Natural Sciences, Quantitative and Mathematical Sciences.

Psychological Brain Sciences
AS.200.313. Models of Mind and Brain. 3.0 Credits.
This is a seminar surveying computational approaches to understanding mental and neural processes, including sensory and conceptual representation, categorization, learning and memory. The course will also develop familiarity with computational tools such as numerical simulation, linear transformation and data visualization. Enrollment limited to Juniors and Seniors. Recommended Course Background: AS.110.106 / Calculus I OR AS.110.108 Calculus I, AS.050.101 / Cognition OR AS.200.211 / Sensation & Perception OR AS.080.105 / Introduction to Neuroscience OR other introductory coursework in cognitive & neural sciences.
Instructor(s): C. Honey
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

General Engineering
EN.500.112. Gateway Computing. 3.0 Credits.
This course introduces fundamental programming concepts and techniques, and is intended for all who plan to develop computational artifacts or intelligently deploy computational tools in their studies and careers. Topics covered include the design and implementation of algorithms using variables, control structures, arrays, functions, files, testing, debugging, and structured program design. Elements of object-oriented programming, algorithmic efficiency and data visualization are also introduced. Students deploy programming to develop working solutions that address problems in engineering, science and other areas of contemporary interest that vary from section to section. Course homework involves significant programming. Attendance and participation in class sessions are expected.
Instructor(s): I. Sekyonda; J. Selinski; M. Darvish Darab
Area: Engineering, Natural Sciences.

EN.500.745. Seminar in Computational Sensing and Robotics. 1.0 Credit.
Seminar series in robotics. Topics include: Medical robotics, including computer-integrated surgical systems and image-guided intervention. Sensor based robotics, including computer vision and biomedical image analysis. Algorithmic robotics, robot control and machine learning. Autonomous robotics for monitoring, exploration and manipulation with applications in home, environmental (land, sea, space), and defense areas. Biorobotics and neuromechanics, including devices, algorithms and approaches to robotics inspired by principles in biomechanics and neuroscience. Human-machine systems, including haptic and visual feedback, human perception, cognition and decision making, and human-machine collaborative systems. Cross-listed Mechanical Engineering, Computer Science, Electrical and Computer Engineering, and Biomedical Engineering.
Instructor(s): L. Whitcomb; P. Kazanzides.

Electrical Computer Engineering
EN.520.434. Modern Biomedical Imaging Instrumentation and Techniques. 3.0 Credits.
An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is team taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern biomedical imaging equipments in clinical and research settings. Co-listed with EN.580.473
Prerequisites: Students may not have taken EN.520.634
Instructor(s): B. Tsui.

EN.520.447. Information Theory. 3.0 Credits.
This course will address some basic scientific questions about systems that store or communicate information. Mathematical models will be developed for (1) the process of error-free data compression leading to the notion of entropy, (2) data (e.g. image) compression with slightly degraded reproduction leading to rate-distortion theory and (3) error-free communication of information over noisy channels leading to the notion of channel capacity. It will be shown how these quantitative measures of information have fundamental connections with statistical physics (thermodynamics), computer science (string complexity), economics (optimal portfolios), probability theory (large deviations), and statistics (Fisher information, hypothesis testing).
Instructor(s): S. Khudanpur
Area: Engineering, Quantitative and Mathematical Sciences.

EN.520.701. Current Topics in Language and Speech Processing. 1.0 Credit.
This biweekly seminar will cover a broad range of current research topics in human language technology, including automatic speech recognition, natural language processing and machine translation. The Tuesday seminars will feature distinguished invited speakers, while the Friday seminars will be given by participating students. A minimum of 75% attendance and active participation will be required to earn a passing grade. Grading will be S/U.
Instructor(s): J. Trmal.
EN.520.702. Current Topics in Language and Speech Processing. 1.0 Credit.
This biweekly seminar will cover a broad range of current research topics in human language technology, including automatic speech recognition, natural language processing and machine translation. The Tuesday seminars will feature distinguished invited speakers, while the Friday seminars will be given by participating students. A minimum of 75% attendance and active participation will be required to earn a passing grade. Cross-listed with Computer Science. Grading will be S/U.
Instructor(s): J. Trmal
Area: Engineering.

Mechanical Engineering
EN.530.707. Robot System Programming. 4.0 Credits.
This course seeks to introduce students to open-source software tools that are available today for building complex experimental and fieldable robotic systems. The course is grouped into sections, each of which building on the previous in increasing complexity and specificity: tools and frameworks supporting robotics research, robotics-specific software frameworks, integrating complete robotic systems, and culminates with an independent project of the student's own design using small mobile robots or other robots in the lab. Students will need to provide a computer (with at least a few GB of memory and a several tens of GB of disc space) running Ubuntu (https://www.ubuntu.com or one of its variants such as Xubuntu) and ROS (http://ros.org/). Students should have an understanding of intermediate programming in C/C++ (including data structures and object-oriented programming). Familiarity with Linux programming. Familiarity with software version control systems such as Git, and linear algebra. Students should see the course homepage http://dscl.lcsr.jhu.edu/ME530707_2018 for more information and to get started with the course. Required Course Prerequisite/Corequisite: EN.530.646 and EN.600.436. Registration only by permission of the instructor. Please contact Prof. Louis Whitcomb at llw@jhu.edu. Please put '530.707 Robot System Programming' in the subject line of your email.
Instructor(s): L. Whitcomb.

Biomedical Engineering
EN.580.468. The Art of Data Science. 3.0 Credits.
In this course, we will cover the fundamentals of doing data science research, explaining "best practices" for each step, that collectively comprise an upward spiral. These steps include: (i) asking an interesting question, (ii) determining the degree to which the answer is known, (iii) assessing there currently exists data to likely obtain a satisfactory answer, (iv) exploring the data set, (v) cleaning up the dataset, (vi) formalizing a statistical inquiry, (vii) positing a statistical model which we hope will yield satisfactory answers, (viii) devising a test to assess the answer, (ix) building an estimator to assess the model, (x) checking the model, (xi) reporting the results, (xii) suggesting the next experiment to perform or question to answer to further enhance the model. Note that this course will largely be project based; each student will be expected to complete each of the above steps on some real data of interest to the student. Lectures will be minimal, giving introductory explanations one day, hopefully only part of the time. The rest of the time, we will work independently or in small groups to complete the weekly portion of the overall project. Please come ready to do science! If you don't have questions that you want answered, you can work in small groups, but each student will need to write the code and reports on their own. Recommended Course Background: No courses are formally required, though students will need to write numerical code (in R, Python, or Julia), and make reports using LaTeX, knitr, or Jupyter notebooks or similar.
Instructor(s): J. Vogelstein
Area: Engineering.

EN.580.473. Modern Biomedical Imaging Instrumentation and Techniques. 3.0 Credits.
An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is team taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern biomedical imaging equipment in clinical and research settings. Co-listed with EN.520.434 Recommended course background: EN.520.432 or EN.580.472
Prerequisites: Students may not have taken EN.580.773.
Instructor(s): B. Tsui
Area: Engineering, Natural Sciences.

EN.580.668. The Art of Data Science. 3.0 Credits.
In this course, we will cover the fundamentals of doing data science research, explaining "best practices" for each step, that collectively comprise an upward spiral. These steps include: (i) asking an interesting question, (ii) determining the degree to which the answer is known, (iii) assessing there currently exists data to likely obtain a satisfactory answer, (iv) exploring the data set, (v) cleaning up the dataset, (vi) formalizing a statistical inquiry, (vii) positing a statistical model which we hope will yield satisfactory answers, (viii) devising a test to assess the answer, (ix) building an estimator to assess the model, (x) checking the model, (xi) reporting the results, (xii) suggesting the next experiment to perform or question to answer to further enhance the model. Note that this course will largely be project based; each student will be expected to complete each of the above steps on some real data of interest to the student. Lectures will be minimal, giving introductory explanations one day, hopefully only part of the time. The rest of the time, we will work independently or in small groups to complete the weekly portion of the overall project. Please come ready to do science! If you don't have questions that you want answered, you can work in small groups, but each student will need to write the code and reports on their own. Recommended Course Background: No courses are formally required, though students will need to write numerical code (in R, Python, or Julia), and make reports using LaTeX, knitr, or Jupyter notebooks or similar.
Instructor(s): J. Vogelstein
Area: Engineering.
EN.580.689. Computational Personal Genomics. 3.0 Credits.
What can we learn from the genome sequence of an individual? Genomic technology now makes it possible to generate huge amounts of DNA sequence data for a single individual at a relatively low cost. To make sense of this data, we need to employ sophisticated computational methods to identify genetic variations that influence an individual’s health. In this course, we will first review the state of the art in sequencing technology, and discuss how this technology is being applied to study human biology and disease. We will then explore the computational methods used to turn raw sequence data into knowledge. Topics will include genetic variant detection; discovery of chromosomal rearrangements and fusions; methods to measure gene expression from RNA; and measurements of the microbiome living inside our bodies. Recommended Course Background: EN.601.447/639, EN.600.363/463, EN.600.688, EN.580.688 (any one is sufficient), or permission of the instructor. Course is also open to undergraduate students.
Instructor(s): S. Salzberg
Area: Engineering.

EN.580.694. Statistical Connectomics. 3.0 Credits.
This course will cover the basics of an exciting emerging field of statistical connectomics (aka, brain-graphs). It is so new, that we are going to make some of it up in this class! The first week will be introductory lectures that I give. The rest of the semester will be run like a seminar; each week will focus on a different topic. On Tuesdays we will hear about a statistical method that operates on graphs, and on Thursdays we will read about some neuroscience data upon which one could apply these techniques. The final project will consist of implementing a statistical method devised for graphs on a brain-graph problem. Recommended background: coursework in probability, linear algebra, and numerical programming (eg, R, Python, Matlab).
Instructor(s): J. Vogelstein
Area: Engineering.

EN.580.745. Mathematics of Deep Learning. 1.5 Credits.
The past few years have seen a dramatic increase in the performance of recognition systems thanks to the introduction of deep networks for representation learning. However, the mathematical reasons for this success remain elusive. For example, a key issue is that the training problem is nonconvex, hence optimization algorithms are not guaranteed to return a global minima. Another key issue is that while the size of deep networks is very large relative to the number of training examples, deep networks appear to generalize very well to unseen examples and new tasks. This course will overview recent work on the theory of deep learning that aims to understand the interplay between architecture design, regularization, generalization, and optimality properties of deep networks.
Instructor(s): R. Vidal.

Information Security Institute
EN.650.624. Advanced Network Security. 3.0 Credits.
This course focuses on advanced security topics and research in computer networks. It builds on the basic overview of network security covered in previous security courses. Beyond the basics of developing security network communications and applications, this advanced course dives deeper into the theory and practice behind network attack, the growing reality of weaponized zero-day vulnerabilities, and the current state-of-the-art responses. Course work includes reviewing contemporary security research papers, hands-on experiments in defending/attacking networks, and writing analyses.
Prerequisites: EN.650.424 OR EN.600.424 or permission of the instructor.
Instructor(s): S. Nielson
Area: Engineering.

EN.650.724. Advanced Network Security. 3.0 Credits.
This course focuses on advanced security topics and research in computer networks. It builds on the basic overview of network security covered in previous security courses. Beyond the basics of developing security network communications and applications, this advanced course dives deeper into the theory and practice behind network attack, the growing reality of weaponized zero-day vulnerabilities, and the current state-of-the-art responses. Course work includes reviewing contemporary security research papers, hands-on experiments in defending/attacking networks, and writing analyses.
Prerequisites: EN.601.644 or permission of the instructor.
Instructor(s): S. Nielson
Area: Engineering.

Doctor of Engineering
https://engineering.jhu.edu/doctor-of-engineering/

Johns Hopkins University’s Doctor of Engineering (D.Eng.) program provides professional engineers with the advanced technical expertise they need to succeed in industry and the public sector by emphasizing creative problem solving and the innovative application of technical knowledge.

• The D.Eng. program is a doctoral-level graduate degree program designed for working engineers and scientists.
• It is a nonresidential, full-time program with semiannual D.Eng. conferences held at the Homewood Campus in Baltimore twice a year (once in January and once in June).
• The program is structured as a research collaboration between a student’s employer and the Whiting School of Engineering.
• Students are actively mentored by a primary advisor in the Whiting School as well as a co-advisor at their place of employment.
• Students customize their program (https://engineering.jhu.edu/doctor-of-engineering/about-the-program/program-structure) to meet their professional goals, and immediately contribute to their current job responsibilities.

Admissions
To be admitted to the Doctor of Engineering program, the application must be approved both by the Doctor of Engineering Oversight Committee as well as the WSE faculty member who will be serving as advisor.

Educational Objectives
There are three overarching educational objectives for D.Eng. students:

• Ability to acquire new, advanced knowledge
Doctor of Engineering

- Ability to formulate a research problem/program
- Execution of the proposed research

These objectives are assessed by three milestone examinations, respectively:

- Preliminary Examination
- Proposal Presentation and Examination
- Project Defense

Curriculum
Year One
Doctor of Engineering students are expected to come to Baltimore twice each year: once in January and once in June for the Semiannual Doctor of Engineering Conferences. D.Eng. students may begin their program at either time.

1. Diagnostic Interview, Syllabus of Study, and Start of Research

D.Eng. students begin their program with an extended, in-person meeting with their advisor. This meeting is called the Diagnostic Interview. The student and advisor discuss the proposed project and identify new material for the student to learn (roughly equivalent to two graduate-level courses). This new material should be relevant to the proposed research, especially to guide the student to fill in background material that the advisor anticipates will be needed. Together, the advisor and student lay out a syllabus of study for the coming months. (The syllabus is then approved by the student’s three-person supervisory committee.

The student works to learn the material on the syllabus. This may be done through online courses (such as those offered by our Engineering for Professionals program) or guided independent reading. The advisor and co-advisor are available to the student to answer questions and, if need be, revise the syllabus. The student works on research.

2. Required Course Enrollment

EN.700.791 Doctor of Engineering Fundamentals. 10 credits

This is an intense, professor-guided, individualized course for D.Eng. students preparing for their Preliminary Examinations. The course instructor is the student’s primary advisor and sets the requirements. Successful students pass their Preliminary Examinations upon completing this course. Students may enroll in this course for multiple semesters if necessary.

3. Preliminary Examination

At the student’s second Doctor of Engineering Conference (in either January or June, roughly six months from the start of their program) they will be examined on the syllabus developed in the Diagnostic Interview. This Preliminary Examination is administered by the student’s supervisory committee. The format of the exam may be either written or oral at the discretion of the supervisory committee.

4. Refining the Written Research Proposal

After successfully completing the Preliminary Exam, the student spends the next six months refining the basic proposal in the application into a robust, more specific written research proposal.

Year Two to Degree Completion

1. Required Course Enrollment

EN.700.792 Doctor of Engineering Proposal. 10 credits

The purpose of this course is to synthesize a coherent research proposal for the Doctor of Engineering major project. The course instructor is the student’s primary advisor, working with the student to create the research proposal to be defended in a public presentation and private examination. Students may enroll in this course for multiple semesters if necessary.

2. Proposal Presentation and Examination

At the start of the 2nd year in the program, the student stands for the Proposal Presentation and Examination. This is an oral exam conducted by the supervisory committee plus two additional JHU faculty members. The first portion of the examination is a presentation of the research proposal. This portion of the exam is a public presentation of the research proposal (and other D.Eng. students are encouraged to attend). This is followed by an examination by the five-member panel to assess the student’s readiness to engage in the proposed research.

3. Continued Research, Project Development, and Defense

Upon successful completion of the Proposal Presentation and Examination, the student earns in earnest to execute the research. Of course, the scope and direction of the research may deviate from the plan originally presented. At this time, the student should register for EN.700.891 Doctor of Engineering Research. 10 - 20 credits

Once the advisor and co-advisor deem the student’s research to be sufficient for the degree, the student presents their research at a public defense conducted by the student’s three-person supervisory committee. PhD students typically report and archive the fruits of their research by writing a dissertation. D.Eng. students may do likewise, but we allow greater latitude in this case. The D.Eng. project must include a written description of the key results, but then maybe evidenced by a portfolio including such items as:

- Prototypes
- Animations or simulations
- Computer code
- Journal paper submissions
- Invention disclosures/patent applications

Taken together, the portfolio is used to evaluate the depth and quality of the student’s work. The design of the portfolio (what is included) is subject to the approval of the student’s advisory committee.

Note that the portfolio, as well as its defense, must be public. That is, neither classified nor otherwise restricted material may be used. However, it is reasonable that the student’s project may support a proprietary application at the student’s home company/agency. Nevertheless, it must be possible for the student to demonstrate their accomplishments in a fully open setting.
### Program Policies

#### Continuous Enrollment Requirement

All D.Eng. students are required to register in every term (Summer, Intersession) and semester (Fall, Spring) they are in the program, and must complete registration at the beginning of each term in accordance with instruction issued by the registrar. Detailed instructions about registration will be provided to all students before the registration period each term.

Students who, for any reason, do not complete their registration until after the prescribed registration period are required to pay a late registration service fee. The late registration fee schedule is posted every semester on the registrar’s website: https://studentaffairs.jhu.edu/registrar/students/graduate-registration/ (see Term Dates & Deadlines). Graduate students must obtain permission from the chair of their department to register after the second week of classes.

#### Non-Curricular Program Requirements

In addition to their academic coursework, exams, and research, D.Eng. students must also satisfy three additional requirements:

- Academic Ethics, EN.500.603 (an online module)
- Responsible Conduct of Research, AS.360.624 (an online module)
- Title IX Training (through JHU’s MyLearning portal)

Please contact Ms. Mia Brooms with any questions.

#### Retakes and Probation

Ideally, students in the Doctor of Engineering program will pass their milestone exams on the first attempt. However, students will have a second chance to pass any of their exams should they fail on their first attempt. Failing any exam twice is grounds for dismissal from the Doctor of Engineering program.

D.Eng. students are expected to be fully engaged and make progress toward their degree. Should a student become disengaged, or have a significant period with no progress, the student may be placed on probation. Please see Assistant Dean Christine Kavanagh (christinekavanagh@jhu.edu) for guidance.

#### Annual Student Review

Doctoral students need to have a clear understanding of their progress and what is expected next in their programs. To this end, D.Eng. students will undergo a formal annual review. This consists of three steps:

- First, the student will be given a self-evaluation in which they should report their accomplishments from the previous year and lay out their expectations for the coming year.
- Second, the Doctor of Engineering Oversight Committee reviews the progress of all students in the program. This requires input from the advisor and co-advisor. This culminates in a letter to the student.
- Third, the student’s advisor presents the Committee’s letter to the student (perhaps via email) and then follows up with a discussion (possibly via video chat).

#### Semiannual Doctor of Engineering Conference

D.Eng. students are nonresidential and therefore have little opportunity to interact with each other. However, they are expected to come to Baltimore for semi-annual Doctor of Engineering Conferences in June and January. As described earlier, the various milestone examinations take place during these conferences. D.Eng. students are strongly encouraged to attend public portions of each other’s oral examinations (proposal and project defenses).

In addition, the conferences provide opportunities for social networking among the students as well as professional development programming.

#### Advisor or Employer Changes

If a D.Eng. student needs to find a new advisor for any reason or will be leaving their sponsoring employer, before completion of the degree, please contact Vice Dean Edward Scheinerman immediately (before finalizing any transition).

#### Funding

The training of a Doctor of Engineering student takes the form of a research contract between the student’s employer and the Whiting School of Engineering. This includes a significant administrative fee plus the cost of the research. D.Eng. students will not be personally liable for these fees, except in the cases of health insurance premiums through the JHU Student Insurance plan facilitated by CHP and any late fees, library fines, etc. There will be no additional funding provided to a D.Eng. student by the Whiting School of Engineering/Johns Hopkins University.

Note that graduate students are subject to these policies and requirements in addition to all university and departmental policies and requirements.

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[1] (p. ) This exam is analogous to the Graduate Board Oral (GBO) examination for PhD students. As with GBO exams, non-JHU examiners may be used on the exam subject to the approval of the WSE Vice Dean for Graduate Education.

#### Faculty

**Chair**
Edward Scheinerman
Chair, Doctor of Engineering Oversight Committee; Vice Dean, Graduate Education; Professor, Applied Mathematics and Statistics

**Doctor of Engineering Oversight Committee**

- John Boland
  Professor Emeritus, Environmental Health and Engineering
- Amy Foster
  Assistant Professor, Electrical and Computer Engineering
- Howard Katz
  Professor, Materials Science and Engineering
- Benjamin Schafer
  Professor, Civil Engineering
- Russell Taylor
  Professor, Computer Science
- Leslie Tung
  Professor, Biomedical Engineering

**Advisory Committee**

Primary Advisor: Any WSE professor or research professor (including BME faculty appointed in the School of Medicine and EHE faculty appointed in the School of Public Health)
The faculty offers undergraduate courses at both the introductory and intermediate levels in these areas, and graduate courses leading to research topics at the forefront of current knowledge. Guided individual study projects available for undergraduates provide opportunities for student participation in activities in the department and in the research programs of the faculty. In the graduate program, original research in close association with individual faculty members is emphasized.

**Current Research Activities**

**Control, Networks, and Systems**
Current research in control, networks, and systems includes the design and analysis of robust control algorithms; design, analysis, and performance evaluation of distributed control algorithms for networked dynamical systems; real-time optimization of dynamical systems; multi-time scale optimization decomposition of networked systems. Application domains include systems and synthetic biology, particularly the analysis of signaling pathways in biological systems; power systems, including multi-timescale market design and co-optimization, distributed control design for frequency regulation, real-time congestion management, and low inertia power systems control; information networks, including the design of clock synchronization algorithms, and joint congestion control and multi-path routing for data networks.

**Image and Signal Processing**
Image analysis efforts currently concern statistical analysis of restoration and reconstruction algorithms, development of statistical image models for image restoration and segmentation, geometric modeling for object detection and estimation, morphological image analysis, magnetic resonance imaging, ultrasound imaging, and photoacoustic imaging. There is opportunity for joint work in image analysis and signal processing with faculty in the Department of Radiology and various other departments within the School of Medicine.

**Acoustics, Speech and Language Processing**
Research in speech processing involves work in all aspects of language or speech science and technology, with fundamental studies under way in areas such as language modeling, pronunciation modeling, natural language processing, neural auditory processing, acoustic processing, optimality theory, and language acquisition. Research starting at the materials used for transduction of acoustic signals, through signal processing involved in extract relevant information from the acoustic signatures, and leading to the interpretation of the information to extract meaning and/or translating between languages.

**Microsystems and Computer Engineering**
Computer engineering research activities include work on computer structures (with emphasis on microprocessors), parallel and distributed processing, fault-tolerant computing, analysis of algorithms, VLSI analog architectures for machine vision, associative processing, and micropower computing, alternative computation systems and devices, applied neuroscience, hardware-friendly algorithms and MEMS.

**Photonics and Physical Electronics**
Current research activities include work in fiber optic sensors and endoscopic 3-D imaging devices for medical applications, secure optical communications, and semiconductor optoelectronics. Other areas of interest involve the study of the nonlinear interactions of light with matter, laser beam control and steering, and plasmonics. Semiconductor device studies include optical detectors, photovoltaics, silicon photonics,

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**Electrical and Computer Engineering**

http://www.ece.jhu.edu/

The Department of Electrical and Computer Engineering at Johns Hopkins is committed to providing a rigorous educational experience that prepares students for further study and successful careers, and is dedicated to research that contributes to fundamental knowledge in both analytical and experimental aspects of the field. The mission of our undergraduate programs is to provide a stimulating and flexible curriculum in fundamental and advanced topics in electrical and computer engineering, basic sciences, mathematics, and humanities, in an environment that fosters development of analytical, computational, and experimental skills and that involves students in design projects and research experiences. At the graduate level, our mission is to prepare advanced training that prepares master's graduates to work at the forefront of knowledge in their chosen specialty, and prepares doctoral students for original research that will advance the frontiers of knowledge in their chosen areas.

The department focuses its teaching and research programs in five major areas:

1. controls, networks and systems;
2. image and signal processing;
3. acoustics, speech and language processing;
4. microsystems and computer engineering, and
5. photonics and physical electronics.

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Co-Advisor: From the student's home company/agency, and vetted by the Doctor of Engineering Oversight Committee

Third Committee Member: Any JHU professor or research professor

For current course information and registration go to https://sis.jhu.edu/classes/

**Courses**

**EN.700.791. Doctor of Engineering Fundamentals. 10.0 Credits.**
This is an intense, professor-guided, individualized course for D.Eng. students preparing for their Preliminary Examinations. The course instructor is the student's primary advisor and sets the requirements. Successful students pass their Preliminary Examinations upon completing this course. Students may enroll in this course for multiple semesters if necessary.

Instructor(s): Staff.

**EN.700.792. Doctor of Engineering Research Proposal. 10.0 Credits.**
The purpose of this course is to synthesize a coherent research proposal for the Doctor of Engineering major project. The course instructor is the student's primary advisor, working with the student to create the research proposal to be defended in a public presentation and private examination. Students may enroll in this course for multiple semesters if necessary.

Instructor(s): Staff.

**EN.700.891. Doctor of Engineering Research. 10.0 - 20.0 Credits.**
Students enroll in this course upon completion of their Research Proposal Examinations while they are conducting advanced engineering research under the supervision of their advisors. The number of credits awarded will vary based on the amount of time students devote to their research; this is exactly analogous to how we assign credit hours for dissertation research for Ph.D. students. Course is for Doctor of Engineering students only. Course is repeatable for credit.

Instructor(s): Staff.

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**Electrical and Computer Engineering**

http://www.ece.jhu.edu/
nanophotonics, quantum cascade lasers, high power III-Nitride electronic devices, VLSI circuit design and modeling and microwave devices and circuits. Study of a laser radar and RF photonics is also being pursued. Theoretical and experimental studies involving linear optical properties of various materials and passive remote sensing of the atmosphere are being investigated.

Facilities
The department maintains extensive facilities for teaching and research in Barton Hall, Hackerman Hall, Wyman, and Maryland Hall. The two main teaching labs (Electrical Engineering Lab and Computer Engineering Lab) make extensive use of state-of-the-art design environments such as CADENCE, Xilinx Tools, TI DSP systems, VHDl, and Verilog. In addition, the department includes the computational sensory motor system lab, the cellular signaling control lab, the parallel computing and imaging lab, the photonics and optoelectronics lab, the semiconductor microstructures lab, and the sensory communication and microsystem lab, adaptive and the sensory communication microsystem lab.

Undergraduate Programs
The Department of Electrical and Computer Engineering offers two bachelor's degree programs: one in Electrical Engineering and one in Computer Engineering (with the close collaboration of the Computer Science Department (p. 821)). Each program is described below. Both degree programs are accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Bachelor of Science in Electrical Engineering
Mission
The faculty of the Electrical Engineering Program at Johns Hopkins is committed to providing a rigorous educational experience that prepares students for further study and to professionally and ethically practice engineering in a competitive global environment. The mission of the program is to provide a stimulating and flexible curriculum in fundamental and advanced topics in electrical engineering, basic sciences, mathematics, and humanities, in an environment that fosters development of analytical, computational, and experimental skills and that involves students in design projects and research experiences; and to provide our electrical engineering graduates with the tools, skills and competencies necessary to understand and apply today's technologies and become leaders in developing and deploying tomorrow's technologies.

Educational Objectives
The Program Educational Objectives (PEOs) for electrical engineering (EE) at the Johns Hopkins University describe what EE graduates are expected to attain within a few years of graduation. The PEOs are determined in consultation with the Electrical and Computer Engineering External Advisory Committee and approved by the ECE faculty.

The educational objectives of the EE program are:

- Our graduates will become successful practitioners in engineering and other diverse careers.
- Some graduates will pursue advanced degree programs in engineering and other disciplines.

Outcomes
Students graduating with a B.S. in electrical engineering will have demonstrated:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Each student and faculty advisor must consider these objectives in planning a set of courses and projects that will satisfy degree requirements. The sample programs and the program checklist are provided in a separate advising manual and illustrate course selections that will help students meet the program objectives.

Faculty and others will assess student performance to ensure that our educational objectives are met. Students will have opportunities to assess their own educational progress and achievements in several ways, including exit interviews and alumni surveys. Through regular review processes, including Academic Council departmental reviews, visits by the departmental external advisory board, course evaluations, and ABET visits, students will have opportunities to discuss their educational experiences and expectations. The outcomes of these assessment processes will be used by the faculty to improve the content and delivery of the educational program.

The success of each student's program will depend on effective faculty advising. Every undergraduate student in the Electrical Engineering Program must follow a program approved by the faculty advisor. The faculty advisor must be a member of the Electrical and Computer Engineering faculty.

Requirements for the Bachelor of Science in Electrical Engineering
The Bachelor of Science degree in electrical engineering requires a minimum of one hundred and twenty-six (126) credits that must include:

Forty-five (45) credits of ECE courses including the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.123</td>
<td>Computational Modeling for Electrical and Computer Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.142</td>
<td>Digital Systems Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.214</td>
<td>Signals and Systems</td>
<td>4</td>
</tr>
<tr>
<td>EN.520.219</td>
<td>Introduction to Electromagnetics</td>
<td>4</td>
</tr>
<tr>
<td>EN.520.230</td>
<td>Mastering Electronics</td>
<td>2</td>
</tr>
<tr>
<td>EN.520.231</td>
<td>Mastering Electronics Laboratory ( Mastering Electronics Lab )</td>
<td>2</td>
</tr>
</tbody>
</table>

Advanced laboratory, design intensive, or senior design project courses 6

Total Credits 24
Six (6) credits of engineering courses from School of Engineering departments other than ECE or Applied Mathematics and Statistics or General Engineering (note: Entrepreneurship and Management courses in the Center for Leadership Education CANNOT be counted as "other engineering courses"). Students must complete enough of the approved non-ECE advanced design labs so that they have at least twelve (12) credits of combined ECE and non-ECE advanced laboratory, design intensive, or senior design project courses. Courses in this group may not be taken Satisfactory/Unsatisfactory.

Mathematics Department or the Applied Mathematics and Statistics Department (20 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.201</td>
<td>Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.212</td>
<td>Honors Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.302</td>
<td>Differential Equations and Applications</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.310/311</td>
<td>Probability &amp; Statistics</td>
<td>4</td>
</tr>
<tr>
<td>or EN.553.420</td>
<td>Introduction to Probability</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

Courses in this group may not be taken Satisfactory/Unsatisfactory. Elementary or precalculus courses such as AS.110.105 Introduction To Calculus or EN.553.111 Statistical Analysis 1- are not acceptable.

Basic Sciences (16)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics:Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

Sixteen (16) credits of basic sciences (physics, chemistry, biology, earth and planetary sciences), which must include AS.171.101 General Physics:Physical Science Major I AS.171.102 General Physics:Physical Science Major II, AS.173.111 General Physics Laboratory I and AS.173.112 General Physics Laboratory II. Courses in this group may not be taken Satisfactory/Unsatisfactory.

At least five (5), three-credit courses in humanities and social sciences, plus two (2) additional credits in EN.660.400 Practical Ethics for Future Leaders and one (1) credit EN.520.404 Engineering solutions in a global, economic, environmental, and societal context ECE students beginning prior to Fall 2018 will be permitted to fulfill this requirement by six (6), three credit courses, or by the guidelines provided above. The humanities and social sciences courses are one of the strengths of the academic programs at Johns Hopkins. They represent opportunities for students to appreciate some of the global and societal impacts of engineering, to understand contemporary issues, and to exchange ideas with scholars in other fields. Some of the courses will help students to communicate more effectively, to understand economic issues, or to analyze problems in an increasingly international world. The selection of courses should not consist solely of introductory courses, but should have both depth and breadth. Typically, this means that students should take at least three (3) courses in a specific area or theme, with at least one of them at an advanced level (300 level or higher).

- A programming language requirement must be met by taking EN.500.112 Gateway Computing or EN.601.220 Intermediate Programming.
- Two (2) writing intensive courses (at least 3 credits each) are required. The writing intensive courses may not be taken Satisfactory/Unsatisfactory and require a C- or better grade. Students may wish to consider a course in Technical Communications to fulfill one of the writing intensive requirements. The course EN.661.315 Culture of the Engineering Profession, is recommended by the ECE Faculty as a writing intensive course.

Additional details concerning advising and degree requirements are in the Electrical Engineering Advising Manual. The B.S. in Electrical Engineering degree program is accredited by the Engineering Accreditation Commission of ABET, [http://www.abet.org](http://www.abet.org).

The sample program below is very general. Sample programs with an emphasis on Signals, Systems, and Communications or Photonics and Optoelectronics can be found in the advising manual.

**Freshman**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4 AS.110.201 Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
<td>4 AS.171.102 General Physics:Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>or 107</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1 AS.173.112 General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>EN.520.137</td>
<td>Introduction To Electrical Computer Engineering</td>
<td>3 EN.520.142 Digital Systems Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>EN.500.112</td>
<td>Gateway Computing</td>
<td>3 EN.520.123 Computational Modeling for Electrical and Computer Engineering</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>15</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.202</td>
<td>Calculus III or 211</td>
<td>4 AS.110.302 Differential Equations and Applications</td>
<td>4</td>
</tr>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3 EN.520.214 Signals and Systems</td>
<td>4</td>
</tr>
<tr>
<td>EN.520.219</td>
<td>Introduction to Electromagnetics</td>
<td>4 EN.520.216 Introduction To VLSI</td>
<td>3</td>
</tr>
</tbody>
</table>

* * *
EN.520.230 Mastering Electronics 2 ECE Elective 1 3
EN.520.231 Mastering Electronics Laboratory 2 H&S 2 3
H&S 5 3

Junior
Fall
Credits Spring Credits
EN.553.310 Probability 4 EN.520.353 Control or 420 Statistics Systems also fulfills req.
EN.520.435 Digital Signal 3 ECE Elective 4 Processing 3
ECE Elective 2 3 ECE Elective 5 3
ECE Elective 3 3 Basic Science Elective (N) 3
EN.660.400 Practical Ethics 2 H&S 4 for Future Leaders 3
EN.520.404 Engineering 1 solutions in a global, economic, environmental, and societal context
Senior
Fall
Credits Spring Credits
Advanced ECE Lab 1 3 Advanced Lab 3 Can be fulfilled by ECE advanced lab or other engineering advanced lab from approved checklist.
Advanced ECE Lab 2 3 Advanced Lab 4 Can be fulfilled by ECE advanced lab or other engineering advanced lab from approved checklist
ECE Elective 6 3 Non-ECE Engineering Elective 2
Non-ECE Engineering Elective 1 3 ECE Elective 7 3
H&S 5 3 H&S 6 3

Total Credits: 126

Bachelor of Science in Computer Engineering

Mission
The Computer Engineering Program at Johns Hopkins is supported by faculty in the Department of Electrical and Computer Engineering and the Department of Computer Science, who are committed to providing a rigorous educational experience that prepares students for further study and to professionally and ethically practice engineering in a competitive global environment. The mission of the program is to provide students with a broad, integrated education in the fundamentals and advanced topics in computer engineering, basic sciences, mathematics, and humanities in an environment that fosters the development of analytical, computational, and experimental skills, and that involves students in design projects and research experiences; and to provide our computer engineering graduates with the tools, skills and competencies necessary to understand and apply today's technologies and become leaders in developing and deploying tomorrow's technologies.

Educational Objectives
The Program Educational Objectives (PEOs) for computer engineering (CE) at the Johns Hopkins University describe what CE graduates are expected to attain within a few years of graduation. The PEOs are determined in consultation with the Electrical and Computer Engineering External Advisory Committee and approved by the ECE faculty.

The educational objectives of the CE program are:

• Our graduates will become successful practitioners in engineering and other diverse careers.
• Some graduates will pursue advanced degree programs in engineering and other disciplines.

Outcomes
Students graduating with a B.S. in computer engineering will have demonstrated:
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Each student and faculty advisor must consider these objectives in planning a set of courses and projects that will satisfy degree requirements. The sample programs and the program checklist included in this advising manual illustrate course selections that will help students meet the program objectives.

Faculty and others will assess student performance to ensure that our educational objectives are met. Students will have opportunities to assess their own educational progress and achievements in several ways, including exit interviews and alumni surveys. Through regular review processes, including Academic Council departmental reviews, visits by the departmental external advisory board, course evaluations, and ABET visits; students will have opportunities to discuss their educational experiences and expectations. The outcomes of these assessment processes will be used by the faculty to improve the content and delivery of the educational program.

The success of each student’s program will depend on effective faculty advising. Every undergraduate student in the Computer Engineering Program must follow a program approved by a faculty advisor.
Requirements for the Bachelor of Science in Computer Engineering

The Bachelor of Science degree in Computer Engineering requires a minimum of 126 credits, which must include the following:

- **Forty-two (42) credits in Computer Engineering**, which must include:

<table>
<thead>
<tr>
<th>Electrical and Computer Engineering courses (15 credits)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.123 Computational Modeling for Electrical and Computer Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.142 Digital Systems Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.214 Signals and Systems</td>
<td>4</td>
</tr>
<tr>
<td>EN.520.230 Mastering Electronics</td>
<td>2</td>
</tr>
<tr>
<td>EN.520.231 Mastering Electronics Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

  a. **Fifteen (15) credits of Electrical and Computer Engineering courses**, which must include EN.520.123 Computational Modeling for Electrical and Computer Engineering, EN.520.142 Digital Systems Fundamentals, EN.520.214 Signals and Systems, EN.520.230 Mastering Electronics, and EN.520.231 Mastering Electronics Laboratory.

  b. **Fifteen (15) credits of Computer Science courses** which must include either EN.601.220 Intermediate Programming, EN.601.226 Data Structures. Either EN.601.229 Computer System Fundamentals or EN.520.222 Computer Architecture can be taken to fulfill this requirement.

  c. **The program must also contain a substantial advanced laboratory and design experience component, appropriate for the student’s interests.** This requirement can be met by taking twelve (12) credits of advanced laboratory, design intensive, or senior design project courses from those given in the degree planning checklist in Section I.C. At least six (6) of these 12 credits must be from ECE or CS courses. A GPA of at least 2.0 must be maintained in Computer Engineering courses. Courses in this category may not be taken Satisfactory/Unsatisfactory.

  - **Six (6) credits of engineering courses from School of Engineering departments other than Computer Science, ECE, Applied Mathematics and Statistics, or General Engineering (note: Entrepreneurship and Management courses in the Center for Leadership Education CANNOT be counted as “other engineering courses”). Students must complete enough of the approved non-CS/ECE advanced design labs so that they have at least twelve (12) credits of advanced laboratory, design intensive, or senior design project courses. Courses in this group may not be taken Satisfactory/Unsatisfactory.

  - **Twenty-four (24) credits in mathematics courses taken from the Mathematics Department or the Applied Mathematics and Statistics Department. AS.110.109 Calculus II (For Physical Sciences and Engineering), AS.110.202 Calculus III, AS.110.201 Linear Algebra or EN.553.291 Linear Algebra and Differential Equations, EN.553.171 Discrete Mathematics, EN.553.310 Probability & Statistics/EN.553.311 Probability and Statistics for the Biological Sciences and Engineering or EN.553.420 Introduction to Probability must be taken. Elementary or precalculus courses such as AS.110.105 or EN.553.111-EN.553.112 are not acceptable. (Calculus I may be waived through an examination taken during freshman orientation. If not waived, it must be taken as a prerequisite to Calculus II.) Courses in this category may not be taken Satisfactory/Unsatisfactory.

  - **Sixteen (16) credits of basic sciences (physics, chemistry, biology, earth and planetary sciences), which must include AS.171.101 General Physics:Physical Science Major I-AS.171.102 General Physics:Physical Science Major II, AS.173.111 General Physics Laboratory I-AS.173.112 General Physics Laboratory II, and AS.030.101 Introductory Chemistry I. Courses in this category may not be taken Satisfactory/Unsatisfactory.

  - **At least five (5), three-credit courses in humanities and social sciences, plus two (2) additional credits in EN.660.400 Practical Ethics for Future Leaders and one (1) credit EN.520.404 Engineering solutions in a global, economic, environmental, and societal context. ECE students beginning prior to Fall 2018 will be permitted to fulfill this requirement by six (6), three credit courses, or by the guidelines provided above. The humanities and social sciences courses are one of the strengths of the academic programs at Johns Hopkins. They represent opportunities for students to appreciate some of the global and societal impacts of engineering, to understand contemporary issues, and to exchange ideas with scholars in other fields. Some of the courses will help students to communicate more effectively, to understand economic issues, or to analyze problems in an increasingly international world. The selection of courses should not consist solely of introductory courses, but should have both depth and breadth. Typically, this means that students should take at least three (3) courses in a specific area or theme, with at least one of them at an advanced level (300 level or higher).

  - **At least two (2) writing intensive courses are required (at least 3 credits each). These courses may not be taken Satisfactory/Unsatisfactory and require a grade of C- or better. Students may wish to consider a course in Technical Communications to fulfill one of the writing intensive requirements.

  - **At least fifteen (15) credits of Computer Science courses, which must include EN.601.220 Intermediate Programming, EN.601.226 Data Structures, and EN.601.229 Computer System Fundamentals. (NOTE: You can count either EN.601.229 Computer System Fundamentals or EN.520.222 Computer Architecture as a CE required course.) If you take EN.500.112 Gateway Computing it will count as a CS credit even though it has a general engineering number (EN.500.XXX). Please be register for the ECE section of Gateway Computing. If you take a different section, you will be required to take a supplemental summer/intercession course to count this towards CS/ECE requirements.

Additional details concerning advising and degree requirements are in the **Computer Engineering Advising Manual**. The B.S. in Computer Engineering degree program is accredited by the Engineering Accreditation Commission of ABET, [http://www.abet.org](http://www.abet.org).

The sample program shown is very general. Other sample programs with a focus in Microsystems, Computer Integrated Surgery, Software, or Robotics can be found in the advising manual.

### Freshman Fall

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
<td>EN.601.220 Intermediate Programming</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.111 General Physics Laboratory I</td>
<td>1</td>
<td>AS.173.112 General Physics Laboratory II</td>
<td>1</td>
</tr>
</tbody>
</table>

### Freshman Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.101 or 107 General Physics:Physical Science Major I</td>
<td>4</td>
<td>AS.171.102 or 108 General Physics: Physical Science Major II</td>
<td>4</td>
</tr>
</tbody>
</table>
## Bachelor of Arts Degree in Electrical Engineering

To meet the requirements for the B.A. degree, the program must include:

- **Eighteen (18) credits of humanities and social sciences courses.**
- **Four writing intensive courses.**
- **Twenty (20) credits of mathematics or mathematical statistics courses.** Typically these include AS.110.108 Calculus I, AS.110.109 Calculus II (For Physical Sciences and Engineering), and AS.110.202 Calculus III or equivalent, and AS.110.201 Linear Algebra. Elementary or pre-calculus courses such as AS.110.105 or EN.553.111-EN.553.112 are not acceptable.
- A **programming language requirement must be met by taking EN.601.107 Introductory Programming in Java** or **EN.601.220 Intermediate Programming** or **EN.500.112 Gateway Computing.** If you take EN.500.112 Gateway Computing it will count as a CS credit even though it has a general engineering number (EN.500.XXX). Please be sure to register for the ECE section of Gateway Computing. If you take a different section, you will be required to take a supplemental summer/intersession course to count this towards ECE requirements. This cannot be taken as a Pass/fail.
- **Thirty (30) credits of ECE courses.** Three credits of computer science courses may be counted toward this 30-credit requirement.
- Additional credits giving a total of at least 120 credits.
- Additional information on academic policies and degree requirements can be found in the Undergraduate Academic Policies section of this catalog.

The student should be aware that the B.A. degree program is **not accredited by the Accreditation Board for Engineering and Technology (ABET).**

### Minor in Robotics
A minor in Robotics is offered by the Laboratory for Computational Sensing and Robotics. Detailed information regarding this program can be found at: [http://lcsr.jhu.edu/robotics-minor/](http://lcsr.jhu.edu/robotics-minor/).

### Minor in Computer-Integrated Surgery
A minor in Computer-Integrated Surgery is offered by the Laboratory for Computational Sensing and Robotics. Detailed information regarding this program can be found at: [http://lcsr.jhu.edu/computer-integrated-surgery-minor/](http://lcsr.jhu.edu/computer-integrated-surgery-minor/).

### Bachelor’s/Master’s Program
At the end of their sophomore year, students who are majors in electrical and computer engineering may apply for admission to the combined bachelor’s/master’s program which combines a B.S. in electrical engineering with a master of science in engineering. If accepted, they must take at least two courses per semester that satisfy the requirements of the M.S.E. program.

### Graduate Programs
Every graduate student in the Department of Electrical and Computer Engineering must follow a program approved by a faculty advisor in the department. The advisor assigned to the student upon admission may be
changed, subject to the approval of the new advisor. Additional details are in the department's Graduate Student Advising Manual.

**Master of Science in Engineering (M.S.E.) Degree**

The department offers a comprehensive and flexible Master of Science in Engineering (M.S.E.) degree program that includes courses from several areas of Electrical and Computer Engineering. In addition, the following specialized M.S.E. tracks are offered: 1) Communications, 2) Control Systems, 3) Language and Speech Processing, 4) Image Processing, 5) Microsystems and Computer Engineering, 6) Photonics and Optoelectronics, and 7) Robotics.

**Requirements for the M.S.E. Degree**

A student who has completed a program of study similar to that required for the B.S. in electrical engineering degree must complete the following requirements for the M.S.E. degree:

- Eight one-semester graduate (400-799) courses approved by the advisor must be satisfactorily completed. At least five of these courses must come from the full-time ECE Department (520.XXX) but cannot include Independent Study, Dissertation Research, ECE Seminar or Special Studies.
- Further depth of understanding must be demonstrated by either satisfactorily completing two additional one-semester graduate (400-799) courses approved by the advisor (one of which must come from the full-time ECE Department (520.XXX), or by writing an M.S.E. thesis acceptable to a member of our faculty, or by completing a special project acceptable to a member of our faculty and writing the corresponding report.
- A course (including independent study) is satisfactorily completed if a grade of A, B, C, or P is obtained. No more than one C grade can be counted toward the requirements and a D or F or second C grade results in probation. A second D or F or a third C grade results in termination from our program.
- Students may transfer in up to two courses from outside JHU. These courses must have been completed after the undergraduate degree was conferred, not applied to a degree elsewhere, and must be approved in advance by the department.
- Every graduate course designated Independent Study, Dissertation Research, or Special Studies counted toward the M.S.E. degree must include a written report. A copy of the report will become part of the student’s permanent file.
- Every student must register for a minimum of two semesters as a full-time resident M.S.E. student in the concurrent B.S./M.S.E. program. Full-time resident M.S.E. students must be enrolled in at least 9 credits to maintain fulltime status (in fall/spring semesters).
- Every student must be registered in the semester that degree requirements are met; this includes students who have no courses remaining in which to enroll but must resolve coursework for which an "Incomplete" grade was assigned and those who must complete other academic requirements, such as a language or computing requirement (these students may apply for Nonresident Status).
- Every student must earn the M.S.E. degree within five consecutive academic years (ten semesters). Only semesters during which a student has a university-approved leave of absence are exempt from the ten semester limit; otherwise, all semesters from the beginning of the student's graduate studies – whether the student is resident or not – count toward the ten semester limit.
- Every student must complete training on academic ethics.
- Every student must complete training on the responsible and ethical conduct of research, if applicable (Please see the WSE Policy on the Responsible Conduct of Research).

**Doctor of Philosophy (Ph.D.) Degree**

The Ph.D. in Electrical and Computer Engineering is oriented with an emphasis on scholarship and research rather than formal coursework. Our Ph.D. program is designed to be easily tailored to the needs and interests of individual students. There are no lists of required courses. The program is directed at independent, highly motivated individuals who desire to work closely with faculty members at the forefront of research in a variety of scientific areas, such as:

- Computational and Biomorphic Systems
- Computational Systems Biology and Bioinformatics
- Computer Engineering
- Control Systems
- Image Processing and Analysis
- Integrated Circuits and Microsystems
- Language and Speech Processing
- Photonics and Optoelectronics
- Signal Processing

**Requirements for the Ph.D. Degree**

University requirements for the Ph.D. degree are listed under Academic Information for Graduate Students (p. 45). In addition, the department requires satisfactory completion of the Ph.D. departmental examination and the university Graduate Board oral examination, preparation of a preliminary research proposal, a departmental seminar presentation, and an oral dissertation defense.

The departmental examination is offered twice yearly. Each faculty member prepares a set of questions, and the student must select and complete the sets of questions of three faculty members. This examination must be passed before the beginning of the fifth semester of full-time graduate study. After passing the examination, the student can be accepted by a faculty member who will oversee the student’s research. This research advisor then guides the remainder of the student’s program leading to the Ph.D. degree.

The university Graduate Board oral examination is administered by a panel consisting of the research advisor, another faculty member in Electrical and Computer Engineering, and three faculty members from other departments. This examination must be taken before the end of the sixth semester.

In the course of research leading to the Ph.D. degree, the student must submit a preliminary research proposal to the department, and present a departmental seminar. Finally, a public dissertation defense will be conducted before a panel of readers consisting of at least three Electrical and Computer Engineering faculty members. Further details concerning M.S.E. and Ph.D. degree requirements are published in a manual for graduate students in Electrical and Computer Engineering.

**Financial Aid**

Financial aid is available for candidates of high promise. Research assistantships are available on sponsored research projects directed by members of the faculty.

For current faculty and contact information go to http://www.ece-jhu.org/index.php/people
Faculty

Chair
Ralph R. Etienne-Cummings
Mixed-signal VLSI, computational sensors, robotics, neuromorphic engineering.

Director of Undergraduate Programs
Trac D. Tran
Filter banks, wavelets, multirate systems and applications.

Director of Graduate Programs
Pablo A. Iglesias
Edward J. Schaefer Professor: systems biology, mathematical modeling of biological systems, control theory.

Professors
Andreas G. Andreou
CMOS devices and integrated circuits, bioelectronics, nanoelectronics, life science microsystems, natural and synthetic sensory systems, neural computation.

John I. Goutsias
Signal and image processing, computational systems biology, bioinformatics, modeling and analysis of complex networked systems.

Hynek Hermansky
Julian S. Smith Professor: emulating and integrating human-like processing strategies into speech engineering systems; neural information processing; human sensory perception; speech and speaker recognition; speech coding and enhancement; and machine learning.

Jin U. Kang
Jacob Suter Jammer Professor: fiber optic devices and lasers, biophotonics, optical imaging and sensing.

Jacob B. Khurgin
Quantum electronics, nonlinear optics.

Jerry L. Prince
William B. Kouwenhoven Professor: image processing and computer vision with application to medical imaging.

T. E. (Ed) Schlesinger
Professor and Benjamin T. Tome Dean: solid state electronic and optical devices, nanotechnology, and information storage systems.

Howard L. Weinert
Fast compact algorithms and software for extracting signals from noise

James West
electroacoustics, physical acoustics, and architectural acoustics.

Associate Professors
Mounya Elhilali
Biological basis of sound and speech perception, neural signal processing, computational neuroscience, cognitive neuromorphic engineering.

Mark A. Foster
Ultrafast and nonlinear optics, all-optical signal processing, ultrafast phenomena and measurement, nonlinear dynamics.

Sanjeev P. Khudanpur
Information theory, statistical language modeling.

Assistant Professors
Muyinatu A. Lediju Bell
Ultrasound imaging, photoacoustic imaging, image quality improvements, advanced beamforming methods, light delivery systems, medical robotics, image-guided surgery, technology development, medical device design, clinical translation.

Najim Dehak
Speech processing and modeling; speaker and language recognition; audio segmentation; emotion recognition and health applications.

Amy C. Foster
Silicon photonics, nonlinear optics, nanophotonics, integrated biophotonics.

Enrique Mallada
Networked dynamics, control, optimization, power networks.

Susanna M. Thon
Renewable energy conversion and storage, photovoltaics, optoelectronics, nanoelectronics and nanophotonics, and scalable fabrication.

Archana Venkataraman
Functional neuroimaging (fMRI, EEG), machine learning & probabilistic inference, network modeling of the brain, integration of imaging, genetics and behavioral data.

Joint, Part-Time, Visiting, and Emeritus Appointments
Emad M. Boctor
Assistant Professor (Radiology): image-guided intervention, ultrasound imaging, elasticity, and thermal imaging.

Paul A. Bottomley
Professor (Radiology): magnetic resonance imaging, metabolic MRI.

Sang (Peter) Chin
Assistant Research Professor: compressive sensing, novel signal processing, game theory, extremal graph theory, differential geometry, and quantum computing and verification.

A. Brinton Cooper III
Associate Research Professor: error control coding, coded wireless, and optical communication.

Noah J. Cowan
Professor (Mechanical Engineering): navigation and control in biological systems; animal biomechanics and multisensory control; robotic systems, dynamics, and control; system identification of rhythmic systems; medical robotics.

Richard V. Cox
Research Professor/Director, Human Language Technology Center of Excellence.

Frederic M. Davidson
Professor Emeritus

Nicholas Durr
Assistant Professor (Biomedical Engineering): endoscopy, medical devices, in-vivo diagnostics, microscopy, surgical guidance, ocular imaging, cytometry, global health, clinical translation, commercial translation.

Eric C. Frey
Professor (Radiology): algorithms for computed tomography, small animal X-ray microcomputed tomography, quantitative PET, SPECT and nuclear medicine imaging, image evaluation, scatter compensation in SPECT, simultaneous dual isotope SPECT and Monte Carlo simulation of radiation transport.

Gene Yevgeny Fridman
Assistant Professor (Otolaryngology): neural prostheses, vestibular and cochlear implants, medical instrumentation.

Israel Gannot
Associate Research Professor.

Dennice F. Gayme
Assistant Professor (Mechanical Engineering): dynamics and control of nonlinear, networked and spatially distributed systems. Applications include: the electric power grid, wall turbulence and wind farms.

Peter Gehlbach
Associate Professor (Ophthalmology): angiogenesis; diabetic retinopathy; microsurgical instrument development; gene therapy; macular degeneration.

Donald J. Geman
Professor (Applied Mathematics and Statistics): computer vision, computational biology, statistical learning.

Robert E. Glaser
Lecturer: advanced digital logic systems.

Moise H. Goldstein Jr.
Professor Emeritus.

Willis Gore
Professor Emeritus.

Gregory D. Hager
Mandell Bellmore Professor (Computer Science): vision, robotics, human-machine systems, computer-integrated medicine.

Richard I. Joseph
Jacob Suter Jammer Professor Emeritus.

Pedro M. Julian
Associate Professor: theory and applications of circuits and systems, nonlinear computational architectures, sensory and neuromorphic processors, low power VLSI systems.

Alexander E. Kaplan
Professor Emeritus

Marin Kobilarov
Assistant Professor (Mechanical Engineering): dynamics and control motion planning reasoning under uncertainty robotics and aerospace.

Xingde Li
Professor (Biomedical Engineering): endomicroscopy technologies, nanobiophotonics and molecular imaging, early detection.

Gerard G.L. Meyer
Professor Emeritus

Michael I. Miller
Professor and Director (Biomedical Engineering): computational anatomy, medical imaging, image understanding.

C. Harvey Palmer Jr.
Professor Emeritus.

Dzung L. Pham
Adjunct Associate Professor (Radiology): homeomorphic brain image segmentation, neuroanatomical atlases in MIPAV, robust tissue classification, statistical characterization of brain tissue in MRI.

Philippe O. Pouliquen
Assistant Research Professor: optoelectronic, mixed signal, low power VLSI, CAD tools for VLSI.

Carey E. Priebe

Arman Rahmim
Associate Professor (Radiology): 3D and spatiotemporal 4D tomographic image reconstruction algorithms; texture and shape analysis as applied to medical imaging (SPECT/PET); diffuse optical tomography (DOT) through the intact brain; cardiac and respiratory motion compensation methods; dynamic whole-body PET/CT parametric imaging; advanced quantitation methods for enhanced prognosis and treatment response assessment in cancer patients; adaptive multi-modality integration of anatomical (e.g. MRI or CT) information into functional (e.g. PET) image reconstruction; Monte Carlo simulation approaches, using high performance computing and mathematical anthropomorphic models; application of numerical observer studies as preliminary substitute for human observers for optimization and validation; modeling and incorporation of resolution degrading effects within image reconstruction tasks.

Charbel G. Rizk
Associate Research Professor: integrated system-on-chip sensors; integrated photonics, controls, autonomous systems, UAV platforms, and sensors; biomimetic devices for medical applications.

Wilson J. Rugh
Edward J. Schaefer Professor Emeritus.

Suchi Saria
Assistant Professor (Computer Science): machine learning; statistical inference; computational health informatics; probabilistic methods; time series models; information extraction in domains with structured and unstructured data (e.g., text, sensing devices, electronic health records, smart rooms); predictive modeling in healthcare.

Sridevi V. Sarma
Associate Professor (Biomedical Engineering) Research Interests: Computational neuroscience, estimation and control theory, applications to disorders of the central nervous system and brain machine interfaces.

J. Webster Stayman
Assistant Professor (Biomedical Engineering) Research Interests: Medical imaging, device design and optimization, adaptive imaging, task-based acquisition, reconstruction, and estimation theory.

Xiaoying Tang
Adjunct Assistant Professor: quantitative medical image analysis; neuroimaging; computational anatomy; computational neuroinformatics.

Nitish V. Thakor
Professor (Biomedical Engineering): medical instrumentation, medical micro and nanotechnologies, neurological instrumentation, signal processing, computer applications.

Benjamin M. W. Tsui
Professor (Radiology): quantitative SPECT, PET and CT imaging techniques, image reconstruction methods, computer simulation tools and methods in imaging, image quality assessment, small animal SPECT, PET and CT imaging techniques.

Rene Vidal
Professor (Biomedical Engineering): computer vision, biomedical imaging, machine learning, signal processing.

Shinji Watanabe
Associate Research Professor (Center for Language & Speech Processing) Research Interests: Speech Recognition, Speech Enhancement, Deep Learning, Spoken Language Processing

C. Roger Westgate
Professor Emeritus.

Raimond Winslow
Raj and Neera Singh Professor (Biomedical Engineering): applied statistical learning, computational cell biology, cardiac electrophysiology, grid-based computing and data sharing for collaborative science.

For current course information and registration go to https://sis.jhu.edu/classes/

**Courses**

**EN.520.123. Computational Modeling for Electrical and Computer Engineering. 3.0 Credits.**
In this course, the students will acquire the skills of solving complex real world Electrical and Computer Engineering problems using computational modeling tools. This course will cover two aspects of solving those ECE problems. The first aspect consists of learning to map ECE tasks to mathematical models. The second aspect consists of introducing the students to the basic of computational algorithms needed to work with the models, and programming such algorithms in MATLAB.

Instructor(s): N. Dehak
Area: Engineering.

**EN.520.137. Introduction To Electrical & Computer Engineering. 3.0 Credits.**
An introductory course covering the principles of electrical engineering including sinusoidal wave forms, electrical measurements, digital circuits, and applications of electrical and computer engineering. Laboratory exercises, the use of computers, and a design project are included in the course.

Instructor(s): T. Tran
Area: Engineering, Quantitative and Mathematical Sciences.

**EN.520.142. Digital Systems Fundamentals. 3.0 Credits.**
Number systems and computer codes, switching functions, minimization of switching functions, Quine - McCluskey method, sequential logic, state tables, memory devices, analysis, and synthesis of synchronous sequential devices.

Instructor(s): P. Julian
Area: Engineering, Quantitative and Mathematical Sciences.

**EN.520.140. Light, Image and Vision. 3.0 Credits.**
This course is designed for beginning undergraduate students and covers the principle of optics and imaging from the human vision perspective. The topics for the course include the basic principles and properties of light, imaging and image formation, optical imaging and display systems, and human vision. The course include bio-weekly labs that allows students to implement and experience the concepts learned during the lectures.

Instructor(s): J. Kang
Area: Engineering.

**EN.520.211. ECE Engineering Team Project. 1.0 Credit.**
This course introduces the student to the basics of engineering team projects. The student will become a member of and participate in the different aspects of an ECE team project over several semesters. (Freshmen and Sophomores)

Instructor(s): C. Rizk; J. Kang; J. West; S. Ramesh
Area: Engineering.

**EN.520.212. ECE Engineering Team Project (Freshmen and Sophomores). 1.0 Credit.**
This course introduces the student to the basics of engineering team projects. The student will participate in an ECE engineering team project as a member. The student is expected to participate in the different aspects of the project over several semesters. (Freshmen and Sophomores) Permission of instructor required.

Instructor(s): C. Rizk; J. Kang; J. West; S. Ramesh
Area: Engineering.

**EN.520.213. Circuits. 4.0 Credits.**
An introductory course on electric circuit analysis. Topics include time domain and frequency domain analysis techniques, transient and steady-state response, and operational amplifiers.

Prerequisites: AS.110.108 and AS.110.109
Instructor(s): B. Mohanty; H. Weinert
Area: Engineering.

**EN.520.214. Signals and Systems. 4.0 Credits.**
An introduction to discrete-time and continuous-time signals and systems covers representation of signals and linear time-invariant systems and Fourier analysis.

Prerequisites: (AS.110.107 OR AS.110.109); AS.110.202 can be taken while taking EN.520.214
Instructor(s): M. Elhilali
Area: Engineering, Quantitative and Mathematical Sciences.

**EN.520.216. Introduction To VLSI. 3.0 Credits.**
This course teaches the basics of switch-level digital CMOS VLSI design. This includes creating digital gates using MOS transistors as switches, laying out a design using CAD tools, and checking the design for conformance to the Scalable CMOS design rules. Recommended: EN.520.213.

Prerequisites: EN.520.142 and recommended: 520.213
Instructor(s): R. Etienne Cummings
Area: Engineering.
EN.520.219. Introduction to Electromagnetics. 4.0 Credits.
Vector analysis, electrostatic fields in vacuum and material media, stationary currents in conducting media, magnetostatic fields in vacuum and material media. Maxwell's equations and time-dependent electric and magnetic fields, electromagnetic waves and radiation, transmission lines, wave guides, applications.
Prerequisites: Co-req: AS.110.202; Prerequisites: ((AS.171.101 and AS.171.102) or (AS.171.101 and AS.171.108) or (AS.171.107 and AS.171.108)) and AS.110.109 Pre/co-req: AS.110.202
Instructor(s): M. Foster
Area: Engineering, Natural Sciences.

EN.520.220. Electromagnetic Waves. 3.0 Credits.
Magnetostatic fields in vacuum and material media. Maxwell's equations and time-dependent electric and magnetic fields, electromagnetic waves and radiation, transmission lines, wave guides, applications.
Prerequisites: EN.520.219 or equivalent
Instructor(s): M. Foster
Area: Engineering, Natural Sciences.

EN.520.222. Computer Architecture. 3.0 Credits.
A study of the structure and organization of classical von Neumann uniprocessor computers. Topics include a brief history of modern machines starting from the Turing computer model, instruction sets, addressing, RISC versus CISC, traps and interrupt handling, two-complement arithmetic, adders and ALUs, CSA's Booth's algorithm, multiplication and division, control unit design, microprogramming, dynamic versus static linking, memory systems and memory hierarchy, paging segmentation, cache hardware, cache organizations, and replacement policies.
Prerequisites: EN.520.142
Instructor(s): P. Pouliquen
Area: Engineering.

EN.520.225. Advanced Digital Systems. 3.0 Credits.
Students are introduced to Hardware Description Languages (HDL) through the assembly of virtual versions of the digital parts used in the previous semester's Digital Systems Fundamentals. From this point on, new components called modules are created as needed to implement larger digital circuits. Increasingly complex digital systems are then created through stages such as desktop calculators, and culminating in the design of microcontrollers and microprocessors. The hardware used for the digital systems designed is a custom board containing a Field Programmable Gate Array (FPGA). This board is configured using software on the student's computer, but is designed to be standalone. That is, once configured, it no longer needs to be connected to any host computer. The architecture of these complex digital systems starts with Finite State Machines (FSM). Hierarchical FSMs are then covered, followed by traditional two and three bus microprocessor architectures and digital signal processors.
Prerequisites: EN.520.142
Instructor(s): P. Pouliquen.

EN.520.230. Mastering Electronics. 2.0 Credits.
With this course, students will have a solid understanding of basic and fundamental electronic concepts and rules including resistive circuits, loop and node analysis, capacitor/inductor circuits, and transient analysis. Students will be able to build, design, and simulate a wide range of electronic devices; the class will focus on building and designing audio devices. Class lectures cover the fundamental concepts of electronics, followed by laboratory exercises that demonstrate the basic concepts. Students will learn to simulate circuits using SPICE. A final project is required. Prerequisites: Physical Science Majors II (AS.171.102); General Physics Laboratory (AS.173.112).
Prerequisites: (AS.110.108 AND AS.110.109) AND ((AS.171.102 OR AS.171.108) AND AS.173.112)
Corequisites: EN.520.231
Instructor(s): A. Foster; S. Ramesh
Area: Engineering.

EN.520.231. Mastering Electronics Laboratory. 2.0 Credits.
With this course, students will have a solid understanding of basic and fundamental electronic concepts and rules including resistive circuits, loop and node analysis, capacitor/inductor circuits, and transient analysis. Students will be able to build, design, and simulate a wide range of electronic devices; the class will focus on building and designing audio devices. Class lectures cover the fundamental concepts of electronics, followed by laboratory exercises that demonstrate the basic concepts. Students will learn to simulate circuits using SPICE. A final project is required. Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.; (AS.110.108 AND AS.110.109) AND ((AS.171.102 OR AS.171.108) AND AS.173.112)
Corequisites: EN.520.230 Mastering Electronics
Instructor(s): A. Foster
Area: Engineering.

EN.520.250. Leading Innovation Design Team. 1.0 Credit.
Project design course that Complements and/or Builds on Core Knowledge Relevant to Electrical & Computer Engineering with emphasis on multidisciplinary projects. All Projects will be sponsored, have clearly defined objectives, and must yield a Tangible Result at Completion. Project duration can vary between a minimum of 2 semesters and a maximum of 5 years. This course will afford the students the opportunity to use their creativity to innovative and to master critical skills such as: customer/user discovery and product specifications; concept development; trade study; systems engineering and design optimization; root cause; and effective team work. The students will also experience first hand the joys and challenges of the professional world. The course will be actively managed and supervised to represent the most effective industry practices with the instruction team, including guest speakers, providing customized lectures, technical support, and guidance. In addition, the students will have frequent interactions with the project sponsor and their technical staff. Specific projects will be listed on ece.jhu.edu For additional info, see link below: https://engineering.jhu.edu/ece/undergraduate-studies/leading-innovation-design-team/
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Rizk
Area: Engineering.
EN.520.251. Leading Innovation Design Team. 1.0 Credit.
Project design course that Complements and/or Builds on Core Knowledge Relevant to Electrical & Computer Engineering with emphasis on multidisciplinary projects. All Projects will be sponsored, have clearly defined objectives, and must yield a Tangible Result at Completion. Project duration can vary between a minimum of 2 semesters and a maximum of 5 years. This course will afford the students the opportunity to use their creativity to innovative and to master critical skills such as: customer/user discovery and product specifications; concept development; trade study; systems engineering and design optimization; root cause; and effective team work. The students will also experience first-hand the joys and challenges of the professional world. The course will be actively managed and supervised to represent the most effective industry practices with the instruction team, including guest speakers, providing customized lectures, technical support, and guidance. In addition, the students will have frequent interactions with the project sponsor and their technical staff. Specific projects will be listed on ece.jhu.edu
Prerequisites: Students may receive credit for only one of the following courses; EN.520.251, EN.520.463 OR EN.520.663.;Laboratory Safety Introductory Course available in MyLearning prior to registration. The course is accessible from the Education tab through the portal my.jhu.edu
Please note that this requirement is not applicable to new students registering for their first semester at Hopkins.
Instructor(s): C. Rizk
Area: Engineering.

EN.520.302. Internet of Things Project Lab. 3.0 Credits.
In this course the student configures, programs, and tests microprocessor modules with wireless interconnectivity for embedded monitoring and control purposes. Several different platforms are explored and programmed in high level languages (HLL). Upon completion, students can use these devices as elements in other project courses. Recommended Course Background: HLL programming and digital logic familiarity; Advanced Microprocessor Lab is a plus.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.
Instructor(s): R. Glaser
Area: Engineering.

EN.520.313. Signals, Systems & Inference. 3.0 Credits.
This course builds on the fundamentals of signal processing to explore state space models and random processes. Topics include LTI systems, feedback, probabilistic models, signal estimation, random processes, power spectral density and hypothesis testing.
Prerequisites: EN.520.214 AND EN.550.310 AND AS.110.201
Instructor(s): A. Venkataraman
Area: Engineering.

EN.520.315. Intro. to Bio-Inspired Processing of Audio-Visual Signals. 3.0 Credits.
An introductory course to basic concepts of information processing of human communication signals (sounds, images) in living organisms and by machine. Recommended Course Background: EN.520.214 (or EN.580.222) or consent of the instructor.
Instructor(s): H. Hermansky
Area: Engineering.

EN.520.340. Introduction to Mechatronics. 3.0 Credits.
Introduction to Mechatronics is mostly hands-on, interdisciplinary design class consisting of lectures about key topics in mechatronics, and lab activities aimed at building basic professional competence. After completing the labs, the course will be focused on a final mini-project for the remainder of the semester. This course will encourage and emphasize active collaboration with classmates. Each team will plan, design, manufacture and/or build, test, and demonstrate a robotic system that meets the specified objectives.
Instructor(s): I. Sekyonda
Area: Engineering.

EN.520.345. Electrical & Computer Engineering Laboratory. 3.0 Credits.
This course consists of 11 one-week laboratory experiments intended to provide an introduction to analog and digital circuits commonly used in engineering. Topics include phase and frequency response, transistors, operational amplifiers, filters, and other analog circuits. The experiments are done using computer controlled digital oscilloscopes, function generators, and power supplies.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.;Prerequisites: (AS.171.101 AND AS.171.102) OR (AS.171.107 AND AS.171.108) AND EN.520.213.
Instructor(s): A. Foster; S. Ramesh
Area: Engineering.

EN.520.349. Microprocessor Lab I. 3.0 Credits.
This course introduces the student to the programming of microprocessors at the machine level. 68HC08, 8051, and eZ8 microcontrollers are programmed in assembly language for embedded control purposes. The architecture, instruction set, and simple input/output operations are covered for each family. Upon completion, students can use these flash-based chips as elements in other project courses. Recommended Course Background: EN.520.142 or equivalent. The lab is open 24/7 and students can still take the class if they are unable to meet during lab time.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): R. Glaser
Area: Engineering.

EN.520.353. Control Systems. 3.0 Credits.
Modeling, analysis, and an introduction to design for feedback control systems. Topics include state equation and transfer function representations, stability, performance measures, root locus methods, and frequency response methods (Nyquist, Bode).
Prerequisites: Prereqs: EN.530.343 AND EN.520.214
Instructor(s): E. Mallada Garcia
Area: Engineering.

EN.520.370. Introduction to Renewable Energy Engineering. 3.0 Credits.
This course provides an introduction to the science and engineering of renewable energy technologies. The class will begin with an overview of today's energy landscape and proceed with an introduction to thermodynamics and basic heat engines. Specific technologies to be discussed include photovoltaics, fuel cells and hydrogen, biomass, wind power and energy storage. The class should be accessible to those from a variety of science and engineering disciplines. Recommended Course Background: Introductory Physics and Calculus.
Prerequisites: (AS.171.101 OR AS.171.107) AND AS.110.109
Instructor(s): S. Thon
Area: Engineering, Natural Sciences.
EN.520.372. Programmable Device Lab. 3.0 Credits.
The use of programmable memories (ROMs, EPROMs, and EEPROMs) as circuit elements (as opposed to storage of computer instructions) is covered, along with programmable logic devices (PLAs and GALs). These parts permit commanding dozens of standard logic packages (TTL logic) into one or more off-the-shelf components. Students design and build circuits using these devices with the assistance of CAD software. Topics include programming EEPROMs; using PLDs as address decoders; synchronous sequential logic synthesis for PLDs; and PLD-based state machines. Recommended Course Background: EN.520.142 and EN.520.345
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): R. Glaser
Area: Engineering.

EN.520.391. CAD Design of Digital VLSI Systems I (Juniors). 3.0 Credits.
An introductory course in which students, manually and through computer simulations, design digital CMOS integrated circuits and systems. The design flow covers transistor, physical, and behavioral level descriptions, using SPICE, Layout, and VerilogHDL VLSI CAD tools. After design computer verification, students can fabricate and test their semester-long class projects. Juniors Only. Recommended Course Background: EN.520.142, EN.520.216 or equivalent; Corequisite: EN600.333, EN.600.334, EN.520.349 or EN.520.372
Instructor(s): R. Etienne Cummings
Area: Engineering.

EN.520.403. Introduction to Optical Instruments. 3.0 Credits.
This course is intended to serve as an introduction to optics and optical instruments that are used in engineering, physical, and life sciences. The course covers first basics of ray optics with the laws of refraction and reflection and goes on to description of lenses, microscopes, telescopes, and imaging devices. Following that basics of wave optics are covered, including Maxwell equations, diffraction and interference. Operational principles and performance of various spectrometric and interferometric devices are covered including both basics (monochromatic, Fabry-Perot and Michelson interferometers), and advanced techniques of near field imaging, laser spectroscopy, Fourier domain spectroscopy, laser Radars and others.
Instructor(s): J. Khurgin
Area: Engineering.

EN.520.404. Engineering solutions in a global, economic, environmental, and societal context. 1.0 Credit.
Students will examine ECE based case studies and will apply decision making theory and leadership theory as it relates to information, communication, healthcare, and energy. The course aims to examine technology as it transitions from old to new, from impossible to possible. It will also evaluate the new hazards that these new technologies may have on the world. The students will have to quantify the good and the bad of each solution and weigh their contribution to Environment, Economy, society and Healthcare. The group will present these case studies to their classmates, justifying the solutions and answers to the ethical dilemmas they faced, and explain the impact of their decisions from an economic, environmental, and global perspective.
Corequisites: EN.660.400
Instructor(s): I. Gannot
Area: Humanities.

EN.520.407. Introduction to the Physics of Electronic Devices. 3.0 Credits.
This course is designed to develop and enhance the understanding of the basic physical processes taking place in the electronic and optical devices and to prepare students for taking classes in semiconductor devices and circuits, optics, lasers, and microwaves devices, as well as graduate courses. Both classical and quantum approaches are used. Specific topics include theory of molecular bonding; basics of solid state theory; mechanical, transport, magnetic, and optical properties of the metals; semiconductors; and dielectrics.
Instructor(s): J. Khurgin
Area: Engineering.

EN.520.412. Machine Learning for Signal Processing. 3.0 Credits.
This course will focus on the use of machine learning theory and algorithms to model, classify and retrieve information from different kinds of real world complex signals such as audio, speech, image and video.
Prerequisites: Student may earn credit for EN.520.612 or EN.520.412, but not both; AS.110.201 AND EN.550.310 AND EN.520.435
Instructor(s): N. Dehak
Area: Engineering.

EN.520.414. Image Processing & Analysis. 3.0 Credits.
The course covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by humans and computers. Topics include elements of visual perception, sampling and quantization, image transforms, image enhancement, color image processing, image restoration, image segmentation, and multiresolution image representation. Laboratory exercises demonstrate key aspects of the course.
Prerequisites: EN.520.214.; Students may earn credit for EN.520.614 or EN.520.414, but not both.
Instructor(s): J. Goutsias
Area: Engineering.

EN.520.415. Image Process & Analysis II. 3.0 Credits.
This course covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by morphological image processing and analysis, image representation and description, image recognition and interpretation.
Prerequisites: Students may earn credit for EN.520.615 or EN.520.415, but not both.; EN.520.414
Instructor(s): J. Goutsias
Area: Engineering.

EN.520.417. Computation for Engineers. 3.0 Credits.
Designing algorithms in a finite precision environment that are accurate, fast, and memory efficient is a challenge that many engineers must face. This course will provide students with the tools they need to meet this challenge. Topics include floating point arithmetic, rounding and discretization errors, problem conditioning, algorithm stability, solving systems of linear equations and least-squares problems, exploiting matrix structure, interpolation, finding zeros and minima of functions, computing Fourier transforms, derivatives, and integrals. Matlab is the computing platform. Background in linear algebra, matrices, digital signal processing, Matlab.
Instructor(s): H. Weinert
Area: Engineering.
EN.520.424. FPGA Synthesis Lab. 3.0 Credits.
This advanced laboratory course in the application of FPGA technology to information processing using VHDL synthesis methods for hardware development. The student will use commercial CAD software for VHDL simulation and synthesis, and implement their systems in programmable XILINX 20,000 gate FPGA devices. The lab will consist of a series of digital projects demonstrating VHDL design and synthesis methodology, building up to final projects at least the size of an 8-bit RISC computer. Projects will encompass such things as system clocking, flip-flop registers, state-machine control, and arithmetic. The students will learn VHDL methods as they proceed through the lab projects, and prior experience with VHDL is not a prerequisite.
Prerequisites: EN.520.142 Recommended Courses: EN.600.333 (Computer System Fundamentals) or EN.520.349 (Microprocessor Lab); Students must have completed Lab Safety training prior to registering for this class; Students may take EN.520.624 or EN.520.644, but not both.
Instructor(s): P. Pouliquen
Area: Engineering, Quantitative and Mathematical Sciences.

EN.520.427. Product Design Lab. 3.0 Credits.
This project-based course is designed to help students learn how to turn their ideas into commercial products. In the first half of the course, emphasis will be placed on the product development process: student teams will gradually build up a complete “contract book” including a mission statement, competitive analysis, patent review, product specifications, system schematics, economic analysis, development schedule, etc. In the second half of the course, each team will be expected to implement its design and demonstrate a prototype of their product’s core functionality. At the end of the semester, a final written report will be submitted in the form of a utility patent. Students are encouraged to take this course in conjunction with Electronic Design Lab (ECE 520.448) in the Spring semester and leverage the groundwork developed here to enable production of a fully functional and marketable prototype by the end of the academic year.
Instructor(s): I. Gannot; S. Ramesh
Area: Engineering.

EN.520.432. Medical Imaging Systems. 3.0 Credits.
This course provides students with an introduction to the physics, instrumentation, and signal processing methods used in general radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality from a signals and systems perspective, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images. Students will additionally engage in hands-on activities to reconstruct medical images from raw data.
Prerequisites: Student may earn credit for EN.520.632 or EN.520.432, but not both; EN.580.222 OR EN.520.214
Instructor(s): M. Bell
Area: Engineering.

EN.520.433. Medical Image Analysis. 3.0 Credits.
This course covers the principles and algorithms used in the processing and analysis of medical images. Topics include interpolation, registration, enhancement, feature extraction, classification, segmentation, quantification, shape analysis, motion estimation, and visualization. Analysis of both anatomical and functional images will be studied and images from the most common medical imaging modalities will be used. Projects and assignments will provide students experience working with actual medical imaging data.
Prerequisites: EN.550.310 OR EN.550.311 OR EN.560.348
Instructor(s): J. Prince
Area: Engineering.

EN.520.434. Modern Biomedical Imaging Instrumentation and Techniques. 3.0 Credits.
An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern biomedical imaging equipments in clinical and research settings. Co-listed with EN.580.473
Prerequisites: Students may not have taken EN.520.634
Instructor(s): B. Tsui.

EN.520.435. Digital Signal Processing. 3.0 Credits.
Methods for processing discrete-time signals. Topics include signal and system representations, z-transforms, sampling, discrete Fourier transforms, fast Fourier transforms, digital filters.
Prerequisites: EN.520.214, Students may receive credit for EN.520.435 or EN.520.635, but not both.
Instructor(s): H. Weinert
Area: Engineering.

EN.520.445. Audio Signal Processing. 3.0 Credits.
This course gives a foundation in current audio and speech technologies, and covers techniques for sound processing by processing and pattern recognition, acoustics, auditory perception, speech production and synthesis, speech estimation. The course will explore applications of speech and audio processing in human computer interfaces such as speech recognition, speaker identification, coding schemes (e.g. MP3), music analysis, noise reduction. Students should have knowledge of Fourier analysis and signal processing.
Prerequisites: Students may take EN.520.445 or EN.520.645, but not both.
Instructor(s): M. Elhilali
Area: Engineering.
EN.520.447. Information Theory. 3.0 Credits.
This course will address some basic scientific questions about systems that store or communicate information. Mathematical models will be developed for (1) the process of error-free data compression leading to the notion of entropy, (2) data (e.g., image) compression with slightly degraded reproduction leading to rate-distortion theory and (3) error-free communication of information over noisy channels leading to the notion of channel capacity. It will be shown how these quantitative measures of information have fundamental connections with statistical physics (thermodynamics), computer science (string complexity), economics (optimal portfolios), probability theory (large deviations), and statistics (Fisher information, hypothesis testing).
Instructor(s): S. Khudanpur
Area: Engineering, Quantitative and Mathematical Sciences.

EN.520.448. Electronics Design Lab. 3.0 Credits.
An advanced laboratory course in which teams of students design, build, test and document application specific information processing microsystems. Semester long projects range from sensors/actuators, mixed signal electronics, embedded microcomputers, algorithms and robotics systems design. Demonstration and documentation of projects are important aspects of the evaluation process. Recommended: EN.600.333, EN.600.334, EN.520.214, EN.520.216, EN.520.349, EN.520.372, EN.520.490 or EN.520.491.
Prerequisites: (EN.520.230 OR EN.520.213) AND (AS.110.108 AND AS.110.109 AND AS.171.101) AND EN.520.142
Instructor(s): P. Julian.

EN.520.450. Advanced Micro-Processor Lab. 3.0 Credits.
This course covers the usage of common microcontroller peripherals. Interrupt handling, timer operations, serial communication, digital to analog and analog to digital conversions, and flash ROM programming are done on the 68HC08, 8051, and eZ8 microcontrollers. Upon completion, students can use these flash-based chips as elements in other project courses. Recommended Course Background: EN.520.349
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): R. Glaser.

EN.520.452. Advanced ECE Engineering Team Project. 3.0 Credits.
This course introduces the student to running an ECE engineering team project. The student will participate in the team project as a leading member and is expected to manage both the team members and the different aspects of the project over several semesters. Permission of the instructor is required for new team members. (Junior and Seniors)
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Rizk; J. Kang; J. West; S. Ramesh
Area: Engineering.

EN.520.453. Advanced ECE Engineering Team Project. 3.0 Credits.
The course introduces the student to running an engineering team project. The student will participate in the ECE engineering team project as a leading member. The student is expected to participate in the different aspects of the project over several semesters and manage both team members and the project. (Juniors and Seniors) Permission of instructor is required.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Rizk; J. Kang; J. West; S. Ramesh
Area: Engineering.

EN.520.454. Control Systems Design. 3.0 Credits.
Classical and modern control systems design methods. Topics include formulation of design specifications, classical design of compensators, state variable and observer based feedback. Computers are used extensively for design, and laboratory experiments are included.
Prerequisites: Students may earn credit for EN.520.654 or EN.520.454, but not both.
Instructor(s): P. Iglesias
Area: Engineering.

EN.520.459. Quantum Mechanics for Engineering. 3.0 Credits.
This course will describe some of the basic ideas in and early development of quantum mechanics. This course is intended for students without any previous background in this subject. A description of some of the fundamental ideas in Quantum Mechanics will be offered from a practical point of view and from a perspective that should be useful to engineers who want to understand how these concepts manifest in materials and devices. Topics include the Schrodinger Wave Equation and the concept of a wave function, quantization in atoms and engineered semiconductor heterostructures, the interaction of radiation and atomic systems, and examples of the application of quantum theory in lasers and electronic solid-state devices. Recommended background for this course includes freshman-year physics (including fundamentals of electricity and magnetism) and sophomore-year mathematics (including partial derivatives, basic differential equations, and fundamentals of linear algebra).
Instructor(s): T. Schlesinger
Area: Engineering, Quantitative and Mathematical Sciences.

EN.520.460. The Art of Error Control Coding. 3.0 Credits.
Error control coding is the study and practice of detecting and/or correcting errors that occur in the transmission of digital information over a noisy communication channel, the transferal of information to and from memory and mass storage in a computer, or in any other application where random processes corrupt information. The student will study encoders and decoders for the most important codes in current use and will confront realistic problems in the use of coding. The course will comprise lectures, discussions, and projects.
Instructor(s): A. Cooper
Area: Engineering, Quantitative and Mathematical Sciences.
EN.520.462. Leading Innovation Design Team. 3.0 Credits.
Project design course that Complements and/or Builds on Core Knowledge Relevant to Electrical & Computer Engineering with emphasis on multidisciplinary projects. All Projects will be sponsored, have clearly defined objectives, and must yield a Tangible Result at Completion. Project duration can vary between a minimum of 2 semesters and a maximum of 5 years. This course will afford the students the opportunity to use their creativity to innovative and to master critical skills such as: customer/user discovery and product specifications; concept development; trade study; systems engineering and design optimization; root cause; and effective team work. The students will also experience first-hand the joys and challenges of the professional world. The course will be actively managed and supervised to represent the most effective industry practices with the instruction team, including guest speakers, providing customized lectures, technical support, and guidance. In addition, the students will have frequent interactions with the project sponsor and their technical staff. Specific projects will be listed on ece.jhu.edu For additional info, see: https://engineering.jhu.edu/ece/undergraduate-studies/leading-innovation-design-team/
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Rizk
Area: Engineering.

EN.520.463. Leading Innovation Design Team. 3.0 Credits.
Project design course that Complements and/or Builds on Core Knowledge Relevant to Electrical & Computer Engineering with emphasis on multidisciplinary projects. All Projects will be sponsored, have clearly defined objectives, and must yield a Tangible Result at Completion. Project duration can vary between a minimum of 2 semesters and a maximum of 5 years. This course will afford the students the opportunity to use their creativity to innovative and to master critical skills such as: customer/user discovery and product specifications; concept development; trade study; systems engineering and design optimization; root cause; and effective team work. The students will also experience first-hand the joys and challenges of the professional world. The course will be actively managed and supervised to represent the most effective industry practices with the instruction team, including guest speakers, providing customized lectures, technical support, and guidance. In addition, the students will have frequent interactions with the project sponsor and their technical staff. Specific projects will be listed on ece.jhu.edu
Prerequisites: Students may receive credit for only one of the following courses; EN.520.251, EN.520.463 OR EN.520.663.
Laboratory Safety Introductory Course available in MyLearning prior to registration. The course is accessible from the Education tab through the portal my.jh.edu. Please note that this requirement is not applicable to new students registering for their first semester at Hopkins.
Instructor(s): C. Rizk
Area: Engineering.

EN.520.465. Digital Communications I. 3.0 Credits.
This course introduces the basic tools and topics of modern digital communication beginning with the mathematical representation and spectral properties of random signals and a basic introduction to the detection of real and complex signals in the presence of noise. Memoryless modulation and demodulation schemes are thoroughly studied for the Gaussian channel, and measures of performance are developed. Topics in wireless communication will be introduced. Recommended Course Background: EN.520.401, EN.553.310 or EN.553.420
Instructor(s): F. Davidson
Area: Engineering, Quantitative and Mathematical Sciences.

EN.520.473. Magnetic Resonance in Medicine. 3.0 Credits.
This course provides a wide-ranging introduction to the physics and principles of magnetic resonance imaging (MRI). Topics include the resonance phenomenon, relaxation, signal formation, spatial localization, image contrast, hardware, signal processing, and image reconstruction. MATLAB simulation exercises will demonstrate key aspects of MRI and a laboratory component using the clinical MRI systems at the School of Medicine will reinforce concepts learned in class. Textbook "Principles of Magnetic Resonance Imaging" by D. Nishimura (from www.lulu.com) should be obtained before the start of the course. Recommended Course Background: (EN.520.434 or EN.580.473) or (EN.520.432 or EN.580.472).
Co-listed with EN.580.476 and EN.580.673.
Instructor(s): M. Schar; P. Bottomley
Area: Engineering, Natural Sciences.

EN.520.482. Introduction To Lasers. 3.0 Credits.
This course covers the basic principles of laser oscillation. Specific topics include propagation of rays and Gaussian beams in lens-like media, optical resonators, spontaneous and stimulated emission, interaction of optical radiation and atomic systems, conditions for laser oscillation, homogeneous and inhomogeneous broadening, gas lasers, solid state lasers, Q-switching and mode locking of lasers.
Prerequisites: EN.520.219 AND EN.520.220
Instructor(s): J. Khurgin
Area: Engineering, Natural Sciences.

EN.520.483. Bio-Photonics Laboratory. 3.0 Credits.
This laboratory course involves designing a set of basic optical experiments to characterize and understand the optical properties of biological materials. The course is designed to introduce students to the basic optical techniques used in medicine, biology, chemistry and material sciences.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. Kang; S. Ramesh.

EN.520.485. Advanced Semiconductor Devices. 3.0 Credits.
This course is designed to develop and enhance the understanding of the operating principles and performance characteristics of the modern semiconductor devices used in high speed optical communications, optical storage and information display. The emphasis is on device physics and fabrication technology. The devices include heterojunction bipolar transistors, high mobility FET's, semiconductor lasers, laser amplifiers, light-emitting diodes, detectors, solar cells and others.
Instructor(s): J. Khurgin
Area: Engineering, Natural Sciences.

EN.520.486. Physics of Semiconductor Electronic Devices. 3.0 Credits.
The course is designed to develop and enhance the understanding of the physical principles of modern semiconductor electronic and opto-electronic devices. The course starts with the basics of band structure of solid with emphasis on group IV and III-V semiconductors as well as two dimensional semiconductors like graphene. It continues with the statistics of carriers in semiconductors and continues to electronic transport properties, followed by optical properties. The course goes on to investigate the properties of two dimensional electronic gas. The second part of the course describes operational principles of bipolar and unipolar transistors, light emitting diodes, photodetectors, and quantum devices.
Prerequisites: Students may earn credit for EN.520.486 or EN.520.686, but not both.
Instructor(s): J. Khurgin.
EN.520.491. CAD Design of Digital VLSI Systems I (Juniors/Seniors). 3.0 Credits.
Juniors and Seniors Only.
Prerequisites: Student may take EN.520.491 or EN.520.691, but not both.; AS.110.109 AND AS.171.102 AND EN.520.142 AND EN.520.142 AND (EN.520.230 OR (EN.520.213 AND EN.520.345))
Instructor(s): R. Etienne Cummings
Area: Engineering.
EN.520.492. Mixed-Mode VLSI Systems. 3.0 Credits.
Silicon models of information and signal processing functions, with implementation in mixed analog and digital CMOS integrated circuits. Aspects of structured design, scalability, parallelism, low power consumption, and robustness to process variations. Topics include digital-to-analog and analog-to-digital conversion, delta-sigma modulation, bioinstrumentation, and adaptive neural computation. The course includes a VLSI design project. Recommended Course Background: EN.521.491 or equivalent.
Instructor(s): P. Pouliquen
Area: Engineering.
EN.520.495. Microfabrication Laboratory. 4.0 Credits.
This laboratory course is an introduction to the principles of microfabrication for microelectronics, sensors, MEMS, and other synthetic microsystems that have applications in medicine and biology. Course comprises of laboratory work and accompanying lectures that cover silicon oxidation, aluminum evaporation, photosist deposition, photolithography, plating, etching, packaging, design and analysis CAD tools, and foundry services. Seniors only or Perm. Req’d. Co-listed as EN.580.495 & EN.530.495
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): A. Andreou; J. Wang
Area: Engineering, Natural Sciences.
EN.520.498. Senior Design Project. 3.0 Credits.
Capstone design project, in which a team of students engineers a system and evaluates its performance in meeting design criteria and specifications. Example application areas are micro-electronic information processing, image processing, speech recognition, control, communications, and biomedical instrumentation. The design needs to demonstrate creative thinking and experimental skills, and needs to draw upon knowledge in basic sciences, mathematics, and engineering sciences. Interdisciplinary participation, such as by biomedical engineering, mechanical engineering, and computer science majors, is strongly encouraged. Instructor permission required.
Instructor(s): Staff
Area: Engineering.
EN.520.499. Senior Design Project. 3.0 Credits.
Capstone design project, in which a team of students engineer a system and evaluate its performance in meeting design criteria and specifications. Example application areas are microelectronic information processing, image processing, speech recognition, control, communications and biomedical instrumentation. The design needs to demonstrate creative thinking and experimental skills, and needs to draw upon knowledge in basic sciences, mathematics and engineering sciences. Interdisciplinary participation, such as by biomedical engineering, mechanical engineering and computer science majors, is strongly encouraged.
Instructor(s): A. Venkataraman
Area: Engineering.
EN.520.502. Indep Study - Fresh/Soph. 0.0 - 3.0 Credits.
Individual, guided study under the direction of a faculty member in the department. The program of study or research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved.
Instructor(s): A. Cooper, M. Bell
Area: Engineering.
EN.520.503. Independent Study-Juniors-Seniors. 3.0 Credits.
Individual, guided study under the direction of a faculty member in the department. The program of study or research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved. May be taken either term by juniors or seniors.
Instructor(s): Staff.
EN.520.504. Independent Study - Juniors/Seniors. 0.0 - 3.0 Credits.
Individual study, including participation in research, under the guidance of a faculty member in the department. The program of study or research, time required, and credit assigned must be worked out in advance between the student and the faculty member involved. May be taken either term by juniors or seniors.
Instructor(s): Staff.
EN.520.506. ECE Undergraduate Research. 1.0 - 3.0 Credits.
Independent research under the direction of a faculty member in the department. The program of research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved. Instructor(s): Staff.
EN.520.516. ECE Group Undergraduate Research. 1.0 - 3.0 Credits.
Independent research under the direction of a faculty member in the department. The program of research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved. This section has a weekly research group meeting that students are expected to attend.
Instructor(s): Staff.
EN.520.545. Research. 1.0 - 3.0 Credits.
Instructor Approval Required. Independent study or research over the summer under the direction of a faculty member in the department. The program of research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved.
Instructor(s): J. West; P. Iglesias; S. Thon.
EN.520.548. Independent Research. 0.0 - 3.0 Credits.
Instructor(s): J. West; P. Iglesias; S. Thon.
EN.520.550. Electrical Engineering - Internship. 0.0 - 3.0 Credits.
Instructor(s): J. Kang; T. Tran.
EN.520.595. Independent Study. 3.0 Credits.
Instructor(s): Staff.
EN.520.597. Research - Summer. 3.0 Credits.
Instructor(s): Staff.
EN.520.599. Internship - Summer. 1.0 Credit.
Instructor(s): F. Davidson; G. Meyer; J. Kang; M. Miller.
EN.520.600. Electrical & Computer Engineering Seminar. 1.0 Credit.
Seminar for Electrical & Computer Engineering; required of all doctoral students who have not passed the qualifying exam. Repeatable course.
Instructor(s): P. Iglesias
Area: Engineering, Natural Sciences.
EN.520.601. Introduction to Linear Systems Theory. 3.0 Credits.
A beginning graduate course in multi-input multi-output, linear, time-invariant systems. Topics include state-space and input-output representations; solutions and their properties; multivariable poles and zeros; reachability, observability and minimal realizations; stability; system norms and their computation; linearization techniques. Recommended Course Background: Undergraduate courses in control systems and linear algebra.
Instructor(s): P. Iglesias.

EN.520.603. Introduction to Optical Instruments. 3.0 Credits.
This course is intended to serve as an introduction to optics and optical instruments that are used in engineering, physical, and life sciences. The course covers first basics of ray optics with the laws of refraction and reflection and goes on to description of lenses, microscopes, telescopes, and imaging devices. Following that basics of wave optics are covered, including Maxwell equations, diffraction and interference. Operational principles and performance of various spectrometric and interferometric devices are covered including both basics (monochromatic, Fabry-Perot and Michelson interferometers), and advanced techniques of near field imaging, laser spectroscopy, Fourier domain spectroscopy, laser Radars and others.
Instructor(s): J. Khurgin
Area: Engineering.

EN.520.612. Machine Learning for Signal Processing. 3.0 Credits.
This course will focus on the use of machine learning theory and algorithms to model, classify and retrieve information from different kinds of real world complex signals such as audio, speech, image and video. Recommended Course Background: AS.110.201, EN.553.310, and EN.520.435.
Prerequisites: Students may earn credit for EN.520.412 or EN.520.612, but not both.
Instructor(s): N. Dehak
Area: Engineering.

EN.520.613. Advanced Topics in Optical Medical Imaging. 3.0 Credits.
The course will review the recent advances in photonics technologies for medical imaging and sensing. The course is designed for graduate students with a back ground in optics and engineering. The main topics for the course are: Light Source and Devices for Biomedical Imaging; Fluorescence, Raman, Rayleigh Scatterings; Optical Endoscopy and Virtual biopsy; Novel imaging contrast dyes, nanoparticles, and optical clearing reagents; Label-free optical technologies in clinical applications; Neurophotonics and Optogenetics.
Instructor(s): J. Kang.

EN.520.614. Image Processing & Analysis. 3.0 Credits.
The course covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by humans and computers. Topics include elements of visual perception, sampling and quantization, image transforms, image enhancement, color image processing, image restoration, image segmentation, and multiresolution image representation. Laboratory exercises demonstrate key aspects of the course. Recommended Prerequisite: EN.520.214 or equivalent
Prerequisites: Students may earn credit for EN.520.614 or EN.520.414, but not both.
Instructor(s): J. Goutsias
Area: Engineering.

EN.520.615. Image Processing & Analysis II. 3.0 Credits.
The course covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by humans and computers. Topics include elements of visual perception, sampling and quantization, image transforms, image enhancement, color image processing, image restoration, image segmentation, and multiresolution image representation. Laboratory exercises demonstrate key aspects of the course. Grad students only.
Prerequisites: Students may earn credit for EN.520.615 or EN.520.415, but not both.
Instructor(s): J. Goutsias
Area: Engineering.

EN.520.616. Processing of Audio and Visual Signals. 3.0 Credits.
This course consists of two parts. The lecture component of this course is covered by attending EN.520.315. Concurrently, on the more advanced graduate level, there is an additional requirement of critical analysis of the material covered, and the hands-on homework complementing the lectures. Recommended Course Background: EN.520.214 (or EN.580.222) or consent of the instructor.
Instructor(s): H. Hermansky.

EN.520.617. Computation for Engineers. 3.0 Credits.
Designing algorithms in a finite precision environment that are accurate, fast, and memory efficient is a challenge that many engineers must face. This course will provide students with the tools they need to meet this challenge. Topics include floating point arithmetic, rounding and discretization errors, problem conditioning, algorithm stability, solving systems of linear equations and least-squares problems, exploiting matrix structure, interpolation, finding zeros and minima of functions, computing Fourier transforms, derivatives, and integrals. Matlab is the computing platform.
Instructor(s): H. Weinert
Area: Engineering.

EN.520.618. Hybrid Systems. 2.0 Credits.
This graduate level seminar style class focuses on the emerging field of hybrid systems. Topics covered include mathematical models of hybrid systems, analysis and controller synthesis techniques, and model complexity reduction.
Instructor(s): D. Tarraf
Area: Engineering.

EN.520.620. Selected Topics in Theory of Iterative Algorithms. 3.0 Credits.
This course covers information on the non-deterministic schema and cyclic iterative schemas, Jacobians, Hessians and Mean Value Theorems, spectral norm, convex sets and positive definite majs.
Instructor(s): G. Meyer.

EN.520.621. Introduction To Nonlinear Systems. 3.0 Credits.
Instructor(s): P. Iglesias
Area: Engineering, Natural Sciences.
EN.520.622. Principles of Complex Networked Systems. 3.0 Credits.
By employing fundamental concepts from diverse areas of research, such as statistics, signal processing, biophysics, biochemistry, cell biology, and epidemiology, this course introduces a multidisciplinary and rigorous approach to the modeling and computational analysis of complex interaction networks. Topics to be covered include: overview of complex nonlinear interaction networks and their applications, graph-theoretic representations of network topology and stoichiometry, stochastic modeling of dynamic processes on complex networks and master equations, Langevin, Poisson, Fokker-Plank, and moment closure approximations, exact and approximate Monte Carlo simulation techniques, time-scale separation approaches, deterministic and stochastic sensitivity analysis techniques, network thermodynamics, and reverse engineering approaches for inferring network models from data.
Instructor(s): J. Goutsias.

EN.520.623. Medical Image Analysis. 3.0 Credits.
Graduate version of 520.433. This course covers the principles and algorithms used in the processing and analysis of medical images. Topics include interpolation, registration, enhancement, feature extraction, classification, segmentation, quantification, shape analysis, motion estimation, and visualization. Analysis of both anatomical and functional images will be studied and images from the most common medical imaging modalities will be used. Projects and assignments will provide students experience working with actual medical imaging data.
Prerequisites: Student may earn credit for 520.433 or 520.623, but not both.
Instructor(s): J. Prince.

EN.520.624. Integrated Photonics. 3.0 Credits.
This course gives an introduction to integrated photonics. Topics include: material platforms, fabrication approaches, devices and device operation, numerical modeling, nonlinear processes, and applications. Devices discussed include waveguides, resonators, sensors, modulators, detectors, lasers and amplifiers. Recommended Course Background: EN.520.219-EN.520.220, EN.520.495, or equivalent.
Instructor(s): A. Foster
Area: Engineering, Natural Sciences.

EN.520.627. Photovoltaics and Energy Devices. 3.0 Credits.
This course provides an introduction to the science of photovoltaics and related energy devices. Topics covered include basic concepts in semiconductor device operation and carrier statistics; recombination mechanisms; p-n junctions; silicon, thin film, and third generation photovoltaic technologies; light trapping; and detailed balance limits of efficiency. Additionally, thermophotovoltaics and electrical energy storage technologies are introduced. A background in semiconductor device physics (EN.520.485, or similar) is recommended.
Instructor(s): S. Thon.

EN.520.628. Satellite Communication System. 3.0 Credits.
This course presents the fundamentals of satellite communications link design and an in-depth treatment of practical considerations. Existing commercial, civil, and military systems are described and analyzed. Topics include satellite orbits, link analysis, antenna and payload design, interference and propagation effects, modulation techniques, coding, multiple access, and Earth station design. The impact of new technology on future systems in this dynamic field is discussed. Recommended Course Background: Communication Systems Engineering or equivalent or permission of the instructor.
Instructor(s): N. Mosavi.

EN.520.629. Networked Dynamical Systems. 3.0 Credits.
Networks and dynamics are pervasive in our world today. Power systems, the Internet, social networks, and biological systems are only a few of the numerous scenarios in which objects or individuals can affect -and be affected by- other members of a large group. This course examines modeling, analysis and design of networked dynamical systems - i.e., dynamic entities interconnected by a network- as well as various applications of such systems in science and engineering. Topics covered include (algebraic) graph theory, basic models of networked dynamical systems, continuous-time and discrete-time distributed averaging (consensus), coordination algorithms (rendezvous, formation, flocking, and deployment), and distributed algorithm computation and optimization over networks. Some of the motivating applications that will be analyzed are robotic coordination, coupled oscillators, social networks, web PageRank, sensor networks, power grids, and epidemics. Recommended Course Background: Linear Algebra (AS.110.201), Control Systems (EN.520.353), or equivalents, basic Matlab skills, and sufficient mathematical maturity.
Instructor(s): E. Mallada Garcia.

EN.520.631. Ultrasound and Photoacoustic Beamforming. 3.0 Credits.
This course will discuss basic principles of ultrasound and photoacoustic imaging and provide an in-depth analysis of the beamforming process required to convert received electronic signals into a usable image. We will cover basic beamforming theory and apply it to real clinical and preclinical data. The course will culminate with student projects to design and implement a new beamformer derived from the principles taught in class.
Instructor(s): M. Bell.

EN.520.632. Medical Imaging Systems. 3.0 Credits.
This course provides students with an introduction to the physics, instrumentation, and signal processing methods used in general radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality from a signals and systems perspective, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images. Students will additionally engage in hands-on activities to reconstruct medical images from raw data.
Instructor(s): M. Bell
Area: Engineering.

EN.520.633. Intro To Robust Control. 3.0 Credits.
The subject of this course is robust analysis and control of multivariable systems. Topics include system analysis (small gain arguments, integral quadratic constraints); parametrization of stabilizing controllers; $H_{\infty}$ optimization based robust control design; and LTI model order reduction (balanced truncation, Hankel reduction). Recommended Course Background: EN.520.601 or EN.530.616 or EN.580.616
Instructor(s): Staff
Area: Engineering.
EN.520.634. Modern Biomedical Imaging Instrumentation and Techniques. 3.0 Credits.
An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is team taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern biomedical imaging equipment in clinical and research settings. Co-listed with EN.580.473/773. Background in EN.520.432 or EN.580.472
Prerequisites: Students may not have taken EN.520.434.
Instructor(s): B. Tsui.
EN.520.635. Digital Signal Processing. 3.0 Credits.
Methods for processing discrete-time signals. Topics include signal and system representations, z-transforms, sampling, discrete Fourier transforms, fast Fourier transforms, digital filters. Audits are not permitted.
Prerequisites: Students may earn credit for EN.520.635 or EN.520.435, but not both.
Instructor(s): H. Weinert
Area: Engineering.
EN.520.636. Feedback Control in Biological Signaling Pathways. 3.0 Credits.
This course considers examples of the use of feedback control in engineering systems and looks for counterparts in biological signaling networks. To do this will require some knowledge of mathematical modeling techniques in biology, so a part of the course will be devoted to this.
Instructor(s): P. Iglesias.
EN.520.644. FPGA Synthesis Lab. 3.0 Credits.
An advanced laboratory course in the application of FPGA technology to information processing, using VHDL synthesis methods for hardware development. The student will use commercial CAD software for VHDL simulation and synthesis, and implement their systems in programmable XILINX 20,000 gate FPGA devices. The lab will consist of a series of digital projects demonstrating VHDL design and synthesis methodology, building up to final projects at least the size of an 8-bit RISC computer. Projects will encompass such things as system clocking, flip-flop registers, state-machine control, and arithmetic. The students will learn VHDL methods as they proceed through the lab projects, and prior experience with VHDL is not a prerequisite.
Prerequisites: Students may take EN.520.424 or EN.520.644, but not both.
Instructor(s): P. Pouliquen
Area: Engineering, Quantitative and Mathematical Sciences.
EN.520.645. Audio Signal Processing. 3.0 Credits.
This course gives a foundation in current audio and speech technologies, and covers techniques for sound processing by processing and pattern recognition, acoustics, auditory perception, speech production and synthesis, speech estimation. The course will explore applications of speech and audio processing in human computer interfaces such as speech recognition, speaker identification, coding schemes (e.g. MP3), music analysis, noise reduction. Students should have knowledge of Fourier analysis and signal processing.
Prerequisites: Students make take EN.520.445 or EN.520.645, but not both.
Instructor(s): M. Elhilali
Area: Engineering.
EN.520.646. Wavelets & Filter Banks. 3.0 Credits.
This course serves as an introduction to wavelets, filter banks, multirate signal processing, and time-frequency analysis. Topics include wavelet signal decompositions, bases and frames, QMF filter banks, design methods, fast implementations, and applications. Recommended Course Background: EN.520.435, AS.110.201, C/C++ and Matlab programming experience.
Instructor(s): T. Tran.
EN.520.648. Compressed Sensing and Sparse Recovery. 3.0 Credits.
Sparsity has become a very important concept in recent years in applied mathematics, especially in mathematical signal and image processing, as in inverse problems. The key idea is that many classes of natural signals can be described by only a small number of significant degrees of freedom. This course offers a complete coverage of the recently emerged field of compressed sensing, which asserts that, if the true signal is sparse to begin with, accurate, robust, and even perfect signal recovery can be achieved from just a few randomized measurements. The focus is on describing the novel ideas that have emerged in sparse recovery with emphasis on theoretical foundations, practical numerical algorithms, and various related signal processing applications. Recommended Course Background: Undergraduate linear algebra and probability.
Instructor(s): T. Tran.
EN.520.649. Introduction to Radar Systems. 3.0 Credits.
This course introduces the fundamental concepts of the modern radar system architecture and design. Topics include the major subsystems and functions of a typical radar, the radar range equation and its different forms, radar cross section, signal to noise ratio, and radar modes. We will also discuss antennas, propagation, pulse compression, detection, tracking and many other general radar topics.
Instructor(s): W. Montlouis.
EN.520.651. Random Signal Analysis. 4.0 Credits.
The content for EN.520.651 has been revised with greater emphasis on graphical models, parameter estimation and posterior inference. Topics include probability theory, random variables/vecors, hypothesis testing, parameter estimation, directed and undirected graphical models, the EM algorithm, deterministic and stochastic approximations for EM, Markov chains and random sequences. Additional material may be covered as appropriate. The class is theoretical in nature; new concepts are presented via formula derivations and example problems. Homework assignments may require familiarity with Matlab (or an equivalent computational software).
Instructor(s): A. Venkataraman.
EN.520.652. Extraction of Signals from Noise. 3.0 Credits.
This course is intended to give students an opportunity to do directed research in algorithm development that culminates in a MATLAB program. Students will learn about extracting signals from noise using statistical and non-statistical models. Topics include Kalman filtering, smoothing, interpolation (upsampling), spline fitting, and the numerical linear algebra issues that impact these problems. Emphasis is on fast, compact, stable algorithms. The grade is based on the term project and occasional homework. There are no examinations. Class attendance is mandatory.
Prerequisites: Some background in linear algebra, matrix theory, random signals, and MATLAB.
Instructor(s): H. Weinert.

EN.520.654. Control Systems Design. 3.0 Credits.
Classical and modern control systems design methods. Topics include formulation of design specifications, classical design of compensators, state variable and observer based feedback. Computers are used extensively for design, and laboratory experiments are included.
Prerequisites: Students may earn credit for EN.520.654 or EN.520.454, but not both.
Instructor(s): P. Iglesias
Area: Engineering.

EN.520.657. Product Design Lab. 3.0 Credits.
This project-based course is designed to help students learn how to turn their ideas into commercial products. In the first half of the course, emphasis will be placed on the product development process: student teams will gradually build up a complete "contract book" including a mission statement, competitive analysis, patent review, product specifications, system schematics, economic analysis, development schedule, etc. In the second half of the course, each team will be expected to implement its design and demonstrate a prototype of their product's core functionality. At the end of the semester, a final written report will be submitted in the form of a utility patent. Students are encouraged to take this course in conjunction with Electronic Design Lab (ECE 520.448) in the Spring semester and leverage the groundwork developed here to enable production of a fully functional and marketable prototype by the end of the academic year.
Instructor(s): I. Gannot; S. Ramesh
Area: Engineering.

EN.520.660. The Art of Error Control Coding. 3.0 Credits.
Error control coding is the study and practice of detecting and/or correcting errors that occur in the transmission of digital information over a noisy communication channel, the transferal of information to and from memory and mass storage in a computer, or in any other application where random processes corrupt information. The student will study encoders and decoders for the most important codes in current use and will confront realistic problems in the use of coding. The course will comprise lectures, discussions, and projects.
Instructor(s): A. Cooper
Area: Engineering, Quantitative and Mathematical Sciences.

EN.520.662. Leading Innovation Design Team. 3.0 Credits.
Project design course that Complements and/or Builds on Core Knowledge Relevant to Electrical & Computer Engineering with emphasis on multidisciplinary projects. All Projects will be sponsored, have clearly defined objectives, and must yield a Tangible Result at Completion. Project duration can vary between a minimum of 2 semesters and a maximum of 5 years. This course will afford the students the opportunity to use their creativity to innovative and to master critical skills such as: customer/user discovery and product specifications; concept development; trade study; systems engineering and design optimization; root cause; and effective team work. The students will also experience first-hand the joys and challenges of the professional world. The course will be actively managed and supervised to represent the most effective industry practices with the instruction team, including guest speakers, providing customized lectures, technical support, and guidance. In addition, the students will have frequent interactions with the project sponsor and their technical staff. Specific projects will be listed on ece.jhu.edu
Instructor(s): C. Rizk.

EN.520.663. Leading Innovation Design Team. 3.0 Credits.
Project design course that Complements and/or Builds on Core Knowledge Relevant to Electrical & Computer Engineering with emphasis on multidisciplinary projects. All Projects will be sponsored, have clearly defined objectives, and must yield a Tangible Result at Completion. Project duration can vary between a minimum of 2 semesters and a maximum of 5 years. This course will afford the students the opportunity to use their creativity to innovative and to master critical skills such as: customer/user discovery and product specifications; concept development; trade study; systems engineering and design optimization; root cause; and effective team work. The students will also experience first-hand the joys and challenges of the professional world. The course will be actively managed and supervised to represent the most effective industry practices with the instruction team, including guest speakers, providing customized lectures, technical support, and guidance. In addition, the students will have frequent interactions with the project sponsor and their technical staff. Specific projects will be listed on ece.jhu.edu
Prerequisites: Students may receive credit for only one of the following courses; EN.520.251, EN.520.463 OR EN.520.663.;Laboratory Safety Introductory Course available in MyLearning prior to registration. The course is accessible from the Education tab through the portal my.jh.edu. Please note that this requirement is not applicable to new students registering for their first semester at Hopkins.
Instructor(s): C. Rizk
Area: Engineering.

EN.520.666. Information Extraction. 3.0 Credits.
Introduction to statistical methods of speech recognition (automatic transcription of speech) and understanding. The course is a natural continuation of EN.601.465 but is independent of it. Topics include elementary probability theory, hidden Markov models, and n-gram models using maximum likelihood, Bayesian and discriminative methods, and deep learning techniques for acoustic and language modeling.
Prerequisites: EN.550.310 AND EN.600.120 or equivalent, expertise in C or C++ or Python programming.
Instructor(s): S. Watanabe.
EN.520.673. Magnetic Resonance in Medicine. 3.0 Credits.
This course provides a wide-ranging introduction to the physics and principles of magnetic resonance imaging (MRI). Topics include the resonance phenomenon, relaxation, signal formation, spatial localization, image contrast, hardware, signal processing, and image reconstruction. MATLAB simulation exercises will demonstrate key aspects of MRI and a laboratory component using the clinical MRI systems at the School of Medicine will reinforce concepts learned in class. Textbook "Principles of Magnetic Resonance Imaging" by D. Nishimura (from www.lulu.com) should be obtained before the start of the course. Recommended Course Background: (EN.520.434 or EN.580.473) or (EN.520.432 or EN.580.472). Co-listed with EN.580.476 and EN.580.673.
Instructor(s): M. Schar; P. Bottomley.

EN.520.678. Biomedical Photonics. 3.0 Credits.
This course will cover the basic optics principles including geometric, beam and wave description of light. The course will also cover the basic generation and detection techniques of light and the principles of optical imaging and spectroscopy. After the basis is established, we will focus on some commonly employed optical techniques and tools for biomedical research including various optical microscopy technologies, fiber optics, Raman spectroscopy, Fluorescence (lifetime), FRAT, FRET and FCS. The recent development in tissue optics, biomedical optical imaging/ spectroscopy techniques (such as OCT; multiphoton fluorescence and harmonics microscopy, Structured Illumination, light scattering, diffuse light imaging and spectroscopy, optical molecular imaging, photo- acoustic imaging) will also be discussed. Representative biomedical applications of translational biomedical photonics technologies will be integrated into the corresponding chapters.
Instructor(s): X. Li
Area: Engineering.

EN.520.680. Speech and Auditory Processing by Humans and Machines. 3.0 Credits.
This graduate level seminar focuses on works that are relevant to building advanced systems for information extraction from auditory signals. It loosely compliments and expands on the lecture material from the graduate course EN.520.515. Participants will take turns in presenting and critically discussing selected topics, with an aim of using this knowledge in their research projects. When available, guest speakers may at times contribute or substitute for the presentation of the participants. Recommended Course Background: Completion or concurrent participation in EN.520.515 or consent of the instructor.
Prerequisites: EN.520.445 OR EN.520.645
Instructor(s): H. Hermansky.

EN.520.682. Introduction to Lasers. 3.0 Credits.
This course covers the basic principles of laser oscillation. Specific topics include propagation of rays and Gaussian beams in lens-like media, optical resonators, spontaneous and stimulated emission, interaction of optical radiation and atomic systems, conditions for laser oscillation, homogeneous and inhomogeneous broadening, gas lasers, solid state lasers, Q-switching and mode locking of lasers. Recommended Course Background: EN.520.219 and EN.520.220.
Instructor(s): J. Khurgin.

EN.520.683. Bio-Photonics Laboratory. 3.0 Credits.
This laboratory course involves designing a set of basic optical experiments to characterize and understand the optical properties of biological materials. The course is designed to introduce students to the basic optical techniques used in medicine, biology, chemistry and material sciences. Graduate version of EN.520.483.
Instructor(s): J. Kang; S. Ramesh.

EN.520.686. Physics of Semiconductor Electronic Devices. 3.0 Credits.
The course is designed to develop and enhance the understanding of the physical principles of modern semiconductor electronic and optoelectronic devices. The course starts with the basics of band structure of solid with emphasis on group IV and III-V semiconductors as well as two dimensional semiconductors like graphene. It continues with the statistics of carriers in semiconductors and continues to electronic transport properties, followed by optical properties. The course goes on to investigate the properties of two dimensional electronic gas. The second part of the course describes operational principles of bipolar and unipolar transistors, light emitting diodes, photodetectors, and quantum devices.
Prerequisites: Students may earn credit for EN.520.486 or EN.520.686, but not both.
Instructor(s): J. Khurgin
Area: Engineering.

EN.520.691. CAD Design of Digital VLSI Systems I (Grad). 3.0 Credits.
Graduate students only.
Prerequisites: Student may take EN.520.491 or EN.520.691, but not both.
Instructor(s): R. Etienne Cummings
Area: Engineering.

EN.520.692. Mixed-Mode VLSI Systems. 3.0 Credits.
This biweekly seminar will cover a broad range of current research topics in human language technology, including automatic speech recognition, natural language processing and machine translation. The Tuesday seminars will feature distinguished invited speakers, while the Friday seminars will be given by participating students. A minimum of 75% attendance and active participation will be required to earn a passing grade. Grading will be S/U.
Instructor(s): J. Trmal.

EN.520.693. Silicon models of information and signal processing functions, with implementation in mixed analog and digital CMOS integrated circuits. Aspects of structured design, scalability, parallelism, low power consumption, and robustness to process variations. Topics include digital-to-analog and analog-to-digital conversion, delta-sigma modulation, bioinstrumentation, and adaptive neural computation. The course includes a VLSI design project. Recommended Course Background: EN.521.491 or equivalent.
Instructor(s): P. Pouliquen.

EN.520.700. Masters Research. 3.0 - 10.0 Credits.
Independent research for masters students.
Instructor(s): D. Povey; J. Prince; S. Khudanpur.

EN.520.701. Current Topics in Language and Speech Processing. 1.0 Credit.
This biweekly seminar will cover a broad range of current research topics in human language technology, including automatic speech recognition, natural language processing and machine translation. The Tuesday seminars will feature distinguished invited speakers, while the Friday seminars will be given by participating students. A minimum of 75% attendance and active participation will be required to earn a passing grade. Grading will be S/U.
Instructor(s): J. Trmal.
Area: Engineering.
EN.520.735. Sensory Information Processing. 3.0 Credits.
Analysis of information processing in biological sensory organs and in engineered microsystems using the mathematical tools of communication theory. Natural or synthetic structures are modeled as microscale communication networks implemented under physical constraints, such as size and available energy resources and are studied at two levels of abstraction. At the information processing level we examine the functional specification, while at the implementation level we examine the physical specification and realization. Both levels are characterized by Shannon's channel capacity, as determined by the channel bandwidth, the signal power, and the noise power. The link between the information processing level and the implementation level of abstraction is established through first principles and phenomenological otherwise, models for transformations on the signal, constraints on the system, and noise that degrades the signals.
Instructor(s): A. Andreou.

EN.520.738. Advanced Electronic Lab Design. 3.0 Credits.
This course is the graduate expansion of the EN.520.448 Electronic Design Lab, which is an advanced laboratory course in which teams of students design, build, test and document application specific information processing microsystems. Semester long projects range from sensors/actuators, mixed signal electronics, embedded microcomputers, algorithms and robotics systems design. Demonstration and documentation of projects are important aspects of the evaluation process. For this graduate expansion, all projects will be based on recently published research from IEEE Transactions. The students will be required to fully research, analyze, implement and demonstrate their chosen topic. The emphasis will be on VLSI microsystems, although other topics will also be considered. Open to graduate students only.
Instructor(s): P. Julian.

EN.520.746. Seminar: Medical Image Analysis. 1.0 Credit.
This weekly seminar will focus on research issues in medical image analysis, including image segmentation, registration, statistical modeling, and applications. It will also include selected topics relating to medical image acquisition, especially where they relate to analysis. The purpose of the course is to provide the participants with a background in research in these areas, as well as to promote greater awareness and interaction between multiple research groups within the University. The format of the course is informal. It will meet weekly for approximately 1.5 hours. Students will read selected papers and will be assigned on a rotating basis to lead the discussion. Co-listed as EN.601.856.
Instructor(s): J. Prince; R. Taylor.

EN.520.771. Advanced Integrated Circuits. 1.0 Credit.
Instructor(s): A. Andreou.

EN.520.773. Advanced Topics In Microsystem Fabrication. 4.0 Credits.
Graduate-level course on topics that relate to microsystem integration of complex functional units across different physical scales from nano to micro and macro. Course comprises of laboratory work and accompanying lectures that cover silicon oxidation, aluminum evaporation, photoresist deposition, photolithography, plating, etching, packaging, design and analysis CAD tools, and foundry services. Topics will include emerging fabrication technologies, micro-electromechanical systems, nanolithography, nanotechnology, soft lithography, self-assembly, and soft materials. Discussion will also include biological systems as models of microsystem integration and functional complexity. Perm. Required.
Instructor(s): J. Wang.

EN.520.788. Biomedical Photonics II. 3.0 Credits.
This course serves as the continuation of 580.678(520.678) (Biomedical Photonics Part I). It will cover the advanced topics on biomedical photonics, including (but not limited to) light scattering (Rayleigh and Mie scattering), photon diffusion, polarization (birefringence), fluorescence, lifetime measurements, confocal microscopy, optical coherence tomography, nonlinear microscopy, and super-resolution microscopy. Representative biomedical applications of some of these technologies will be integrated into the relevant chapters. If the lab space becomes available, we will also offer a hand-on lab section (optional) for students to design and build an imaging instrument. Recommended Background: Biomedical Photonics (580.678/520.678), or equivalent background on optics.
Instructor(s): X. Li.

EN.520.800. Independent Study. 1.0 - 3.0 Credits.
Individual, guided study under the direction of a faculty member in the department. May be taken either term by graduate students.
Instructor(s): Staff.

EN.520.801. Dissertation Research. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.520.802. Dissertation Research. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.520.890. Independent Study-Summer. 1.0 - 3.0 Credits.
Instructor(s): Staff.

Cross Listed Courses

General Engineering

EN.500.112. Gateway Computing. 3.0 Credits.
This course introduces fundamental programming concepts and techniques, and is intended for all who plan to develop computational artifacts or intelligently deploy computational tools in their studies and careers. Topics covered include the design and implementation of algorithms using variables, control structures, arrays, functions, files, testing, debugging, and structured program design. Elements of object-oriented programming, algorithmic efficiency and data visualization are also introduced. Students deploy programming to develop working solutions that address problems in engineering, science and other areas of contemporary interest that vary from section to section. Course homework involves significant programming. Attendance and participation in class sessions are expected.
Instructor(s): I. Sekyonda; J. Selinski; M. Darvish Darab
Area: Engineering, Natural Sciences.

EN.500.745. Seminar in Computational Sensing and Robotics. 1.0 Credit.
Seminar series in robotics. Topics include: Medical robotics, including computer-integrated surgical systems and image-guided intervention. Sensor based robotics, including computer vision and biomedical image analysis. Algorithmic robotics, robot control and machine learning. Autonomous robotics for monitoring, exploration and manipulation with applications in home, environmental (land, sea, space), and defense areas. Biorobotics and neuromechanics, including devices, algorithms and approaches to robotics inspired by principles in biomechanics and neuroscience. Human-machine systems, including haptic and visual feedback, human perception, cognition and decision making, and human-machine collaborative systems. Cross-listed Mechanical Engineering, Computer Science, Electrical and Computer Engineering, and Biomedical Engineering.
Instructor(s): L. Whitcomb; P. Kazanzides.
Materials Science Engineering
EN.510.314. Electronic Properties of Materials. 3.0 Credits.
Fourth of the Introduction to Materials Science series, this course is devoted to a study of the electronic, optical and magnetic properties of materials. Lecture topics include electrical and thermal conductivity, thermoelectricity, transport phenomena, dielectric effects, piezoelectricity, and magnetic phenomena. This course contains computational modules; some prior knowledge of computer programming is needed. Recommended Course Background: EN.510.202 (Computation and Programming for Materials Scientists and Engineers) or equivalent. Prerequisites: EN.510.311
Instructor(s): H. Katz
Area: Engineering, Natural Sciences.
EN.510.418. Electronic and Photonic Processes and Devices. 3.0 Credits.
This course is intended for advanced undergraduates and graduate students and will cover the fundamentals and properties of electronic and optical materials and devices. Subject matter will include a detailed and comprehensive discussion of the physical processes underlying modern electronic and optical devices. Detailed descriptions of modern semiconductor devices such as lasers and detectors used in optical communications and information storage and processing will be presented. Also listed as EN.510.618/EN.510.418.
Instructor(s): T. Poehler
Area: Engineering, Natural Sciences.
EN.510.611. Solid State Physics. 3.0 Credits.
An introduction to solid state physics for advanced undergraduates and graduate students in physical science and engineering. Topics include crystal structure of solids; band theory; thermal, optical, and electronic properties; transport and magnetic properties of metals, semiconductors, and insulators. The concepts of solid state principles in modern electronic, optical, and structural materials are discussed. Cross-listed with Electrical and Computer Engineering.
Instructor(s): T. Poehler
EN.510.612. Solid State Physics. 3.0 Credits.
Basic solid state physics principles applied to modern electronic, optical, and structural materials. Topics discussed will include magnetism, superconductivity, polymers, nano-structured materials, electronic effects, and surface physics. For advanced undergraduates and graduate students in physical science and engineering. Recommended Course Background: EN.510.611
Instructor(s): T. Poehler.
EN.510.618. Electronic and Photonic Processes and Devices. 3.0 Credits.
This course is intended for advanced undergraduates and graduate students and will cover the fundamentals and properties of electronic and optical materials and devices. Subject matter will include a detailed and comprehensive discussion of the physical processes underlying modern electronic and optical devices. Detailed descriptions of modern semiconductor devices such as lasers and detectors used in optical communications and information storage and processing will be presented. Also listed as EN.510.618/EN.510.418.
Instructor(s): T. Poehler.

Mechanical Engineering
EN.530.421. Mechatronics. 3.0 Credits.
Students from various engineering disciplines are divided into groups of two to three students. These groups each develop a microprocessor-controlled electromechanical device, such as a mobile robot. The devices compete against each other in a final design competition. Topics for competition vary from year to year. Class instruction includes fundamentals of mechanism kinematics, creativity in the design process, an overview of motors and sensors, and interfacing and programming microprocessors.
Prerequisites: EN.530.420 or EN.520.240 or permission of instructor;
Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Rizk
Area: Engineering.
EN.530.682. Haptic Applications. 4.0 Credits.
An introduction to the required theoretical and practical background in the design and development of haptic applications. Haptic technology enables users to touch and/or manipulate virtual or remote objects in simulated environments or tele-operation systems. This course aims to cover the basics of haptics through lectures, lab assignments, a term project, and readings on current topics in haptics. Through lab assignments, students learn to create haptic-enabled virtual environments using software development toolkits and a haptic device.
Students will be required to complete a project with approval of the instructor. Recommended course background: ME, CS, and ECE graduate and senior undergraduate students who are being enthusiastic to learn about haptics and knowledgeable in basic C++ programming. Students with experience with other programming languages (Python, Java, etc.) should be able to self-tutor themselves to complete lab assignments.
Instructor(s): M. Zadeh.
Biomedical Engineering
EN.580.472. Medical Imaging Systems. 3.0 Credits.
An introduction to the physics, instrumentation, and signal processing methods used in general radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images. Cross-listed with Neuroscience and Electrical and Computer Engineering (EN.520.432).
Prerequisites: EN.580.222 OR EN.520.214
Instructor(s): M. Bell
Area: Engineering.
EN.580.483. Nuclear Medicine Imaging. 3.0 Credits.
This course provides an intermediate-level introduction to the instrumentation, image processing and reconstruction methods used in planar nuclear medicine imaging, single-photon emission computed tomography (SPECT) and positron emission tomography (PET). Topics include radioactive decay, nuclear medicine instrumentation including radiation detectors and associated electronics, analytic and statistical iterative tomographic reconstruction, imaging physics, and image quality in the context of these three modalities. This course will be taught at the School of Medicine Campus. Recommended Course Background: EN.520.432/EN.580.472 and EN.520.434/EN.580.473
Instructor(s): A. Rahmim; B. Tsui; E. Frey; Y. Du
Area: Engineering.
Computer Science

EN.601.479. Representation Learning. 3.0 Credits.

Often the success of a machine learning project depends on the choice of features used. Machine learning has made great progress in training classification, regression and recognition systems when "good" representations, or features, of input data are available. However, much human effort is spent on designing good features which are usually knowledge-based and engineered by domain experts over years of trial and error. A natural question to ask then is "Can we automate the learning of useful features from raw data?" Representation learning algorithms such as principal component analysis aim at discovering better representations of inputs by learning transformations of data that disentangle factors of variation in data while retaining most of the information. The success of such data-driven approaches to feature learning depends not only on how much data we can process but also on how well the features that we learn correlate with the underlying unknown labels (semantic content in the data). This course will focus on scalable machine learning approaches for learning representations from large amounts of unlabeled, multi-modal, and heterogeneous data. We will cover topics including deep learning, multi-view learning, dimensionality reduction, similarity-based learning, and spectral learning. Students may receive credit for 601.479 or 601.679 but not both. [Analysis or Applications] Required course background: machine learning or basic probability and linear algebra.

Prerequisites: If you have completed EN.600.679 you may not enroll in EN.600.479.
Instructor(s): R. Arora
Area: Engineering.

EN.601.679. Representation Learning. 3.0 Credits.

Graduate level version of 601.479. Students may receive credit for 601.479 or 601.679 but not both. [Analysis or Applications] Required course background: machine learning or basic probability and linear algebra. Co-listed with EN.601.479

Prerequisites: If you have completed EN.600.479 you may not enroll in EN.600.679.
Instructor(s): R. Arora.

Environmental Health and Engineering

https://ehe.jhu.edu/

Housed in both the Whiting School of Engineering and Bloomberg School of Public Health, the Department of Environmental Health and Engineering is the only program of its kind, bringing environmental engineering and public health faculty into a single, collaborative department. The overarching goal of the program is to prepare students to tackle the environmental challenges of the 21st century by both identifying existing and emerging environmental issues and developing innovative policy and technical solutions to address these threats to our environment and mankind.

EHE offers three programs of study to prepare students for a future in interdisciplinary scientific collaboration:

- an undergraduate program (Bachelor of Science in Engineering),
- a Master's program with varied tracks, concentrations, and research opportunities, and
- a doctoral degree program.

Drawing from a number of cross-disciplinary disciplines and approaches, EHE is concerned with identifying, exploring, and ultimately solving environmental problems including (but certainly not limited to):

- air pollution, assessment, management and health outcomes
- aquatic chemistry
- bioinformatics
- climate and health
- drinking water, water reuse, and wastewater treatment
- environmental and economic policy, law, and management
- environmental nanotechnology
- energy and water systems
- epidemiology and epigenetics
- microbiology and microbial ecology
- toxicology, physiology, and metabolomics
- evaluation of environmental program impacts
- hazardous and solid waste engineering and management
- landscape hydrology and transport
- occupational exposure assessment and health impacts
- particle interaction
- pollutant fate and transport

Interdisciplinary, collaborative practices within our academic programs are necessary in order to most effectively identify and address longstanding, environmental questions and problems. Because of its diversity of interests and association with other departments within the university, EHE is able to offer a broad range of study and research opportunities for both undergraduate and graduate students.

Facilities

Our state of the art labs and facilities are well-equipped for research and study within a vast array of interdisciplinary areas of study. On the Homewood campus, EHE offices and laboratories are located in Ames Hall and at the Stieff Building. In addition to computers for scientific modelling laboratories, EHE has two undergraduate teaching labs and many individual laboratories for environmental engineering and health research. Each lab is equipped with a broad array of state-of-the-art analytical equipment for assessment of biologics and chemicals in water, waste water, and soil.

Extensive computer facilities and high speed computing are available both in the department and the university as a whole for computational and modeling studies.

On the Bloomberg campus, EHE offices and laboratories are located on the 6th and 7th floors of the Public Health building. Laboratories include state-of-the-art equipment and facilities for assessment of hazardous environmental chemicals/toxicants (airborne, waterborne, or foodborne) on human health and the exploration of the physiological, immune, genetic, and/or epigenetic origins of these effects.

Students have access to a broad range of core facilities on both campuses including: Mass Spectrometry and Proteomics, Biostatistics, and Data Management, Computational Biology, Genetics Resource Core, High Throughput Chemical Screening Core, Deep Sequencing and Microarray Cores.
Students graduating with a B.S. in Environmental Engineering will have demonstrated:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multidisciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in life-long learning
- (i) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

and, the following specific Environmental Engineering outcomes:

- EE(1a) Understand and apply the principles upon which engineering practice is based: physical, chemical, and biological science
- EE(1b) Understand and apply the principles upon which engineering practice is based: mathematics and scientific computation
- EE(1c) Understand and apply the principles upon which engineering practice is based: economics
- EE(1d) Understand and apply the principles upon which engineering practice is based: engineering science
- EE(2) – Have the knowledge and skills to design, conduct, and evaluate experiments
- EE(3) – Understand the cross-media (air, water, earth) nature of environmental problems and the need for multidisciplinary approaches to their solution.
- EE(4) – Be able to design systems, components, or processes that provide engineering solutions to environmental problems given realistic economic, social, political, ethical, health, safety, and sustainability constraints
- EE(5) – Demonstrate critical thinking skills and ability for independent study needed to engage in life-long learning
- EE(6) – Possess the knowledge and skills to identify, formulate, and implement solutions to engineering problems using modern engineering tools and synthesizing different fields of knowledge
- EE(7) – Can communicate both orally and in writing, and effectively function in multidisciplinary teams
- EE(8) – Understand contemporary issues, the social nature of environmental problems, and the context in which environmental engineering is practiced in modern society
- EE(9) – Have access to specialized training through coursework and research
- EE(10) – Understand professional ethics and the value of service through participation in technical activities and in professional organizations

Working with faculty on both campuses, students conduct research in our local, regional, national, and global laboratories and field sites.

**Undergraduate Programs**

The Department of Environmental Health and Engineering offers:

- an undergraduate Bachelor of Science (B.S.E.) degree in Environmental Engineering
- four focus areas within the environmental engineering major:
  - Environmental Management and Economics
  - Environmental Engineering Science
  - Environmental Transport
  - Environmental Health Engineering
- three minors:
  - a minor in environmental engineering
  - a minor in environmental sciences
  - a minor in engineering for sustainable development
- a five-year combined (B.S./M.S. or B.S./M.S.E.) program.

As part of these minor programs, or as part of other programs of the student's own design, the department offers electives in such areas as ecology, geomorphology, water and wastewater pollution treatment processes, environmental systems analysis, and environmental policy studies.

**Major in Environmental Engineering**

The mission of our undergraduate program is to provide students with a broadly based yet rigorous education in the fundamental subjects central to the field, in a milieu that fosters development of a spirit of intellectual inquiry and the problem-solving skills required to address the open-ended issues characteristic of the real world.

Our B.S. program provides a strong foundation in the physical, chemical, and biological sciences, as well as in mathematics, engineering science, and engineering design. It is broad and flexible enough to accommodate students with a variety of interests in environmental engineering. This training should provide an ideal preparation for future employment in business or industry or for subsequent training at the graduate level, either in environmental engineering or in a field such as environmental law, public health, or medicine.

**Program Objectives**

The B.S. in Environmental Engineering degree program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

**ABET Program Educational Objectives**

The BSEE Program Educational Objectives focus on objectives that our graduates are expected to attain within a few years of graduation. The objectives were reviewed and approved by our external advisory committee in May 2015. The objectives are stated as follows:

The Program in Environmental Engineering educates students to think critically, communicate clearly, and collaborate effectively as they apply the fundamental scientific principles of engineering to environmental problems. We emphasize the importance of intellectual growth, professional ethics, and service to society. Our graduates are prepared to be successful

- engineering professionals in private and governmental organizations, and
- students in the best graduate programs.
Environmental Health and Engineering

Annual Student Enrollment and Graduation Data
Academic Year/ Total Enrolled/ Total Graduated
2015-16/ 61/ 18
2016-17/ 56/ 13
2017-18/ 45/ 9

Continuous Improvement
The Department of Environmental Health and Engineering strives to continuously improve its curriculum by using performance criteria to regularly assess its program educational objectives (what skills it expects its students to demonstrate). The environmental engineering program uses the results of each assessment to continuously improve upon its curriculum and thus ensure that it is meeting the needs of its students.

Our department is noted for our students' exceptionally high pass rate of the "Fundamentals of Engineering" (FE) exam offered by the National Council of Examiners for Engineering and Surveying (NCEES).

Focus Areas within the Environmental Engineering (EE) Major
Students must select among four different focus areas:

- Environmental Management and Economics
- Environmental Engineering Science
- Environmental Transport
- Environmental Health Engineering

With the assistance of a faculty advisor, each student will plan a curriculum suited to his or her ultimate career goals. The program also encourages and supports individual study and research. Program requirements total 125 credits.

Mathematics with a focus on applications (19 credits)

Required Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.302</td>
<td>Differential Equations and Applications</td>
<td></td>
</tr>
<tr>
<td>AN advanced course (300-level or higher) in probability and statistics. The Department of Applied Mathematics and Statistics offers a number of suitable courses.</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 19

Basic Science (BS) (24-25 credits)

Required courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.101</td>
<td>General Physics: Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
<td></td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>One year of introductory chemistry (i.e. AS.030.101 Introductory Chemistry I and AS.030.102 Introductory Chemistry II)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits: 24

Humanities and Social Sciences (HS) (18 credits)
A minimum of six courses totaling 18 credits in Humanities or Social Sciences. The six courses must include:

1. one advisor-approved course that specifically develops writing skills (e.g., a how to write class),
2. EN.570.334 Engineering Microeconomics, and
3. four additional Humanities and Social Sciences courses with at least two at the 300-level or higher. EN.570.406 Environmental History can be taken as part of these requirements.

Please note that the writing course will fulfill one of the two writing intensive courses required by the university.

Note: most medical schools require a year of English literature and/or composition.

Required course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.334</td>
<td>Engineering Microeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective examples for EHE:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.406</td>
<td>Environmental History</td>
<td>3</td>
</tr>
</tbody>
</table>

Writing course examples:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.220.105</td>
<td>Fiction/Poetry Writing I</td>
<td>3</td>
</tr>
<tr>
<td>or AS.220.106</td>
<td>Fiction/Poetry Writing II</td>
<td></td>
</tr>
<tr>
<td>AS.220.146</td>
<td>Introduction to Science Writing</td>
<td>3</td>
</tr>
<tr>
<td>Either AS.060.113 or AS.060.114; both cannot be counted for H/S credit.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>AS.060.113</td>
<td>Expository Writing ²</td>
<td>3</td>
</tr>
<tr>
<td>or AS.060.114</td>
<td>Expository Writing ²</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 24

General Engineering (GE) (16 credits)

Required courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.108</td>
<td>Introduction Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>An introductory course in computing, such as:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EN.570.210</td>
<td>Computation/Math Modeling</td>
<td></td>
</tr>
<tr>
<td>A course in thermodynamics, such as:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EN.540.203</td>
<td>Engineering Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>&amp; EN.510.312</td>
<td>Thermodynamics/Materials</td>
<td></td>
</tr>
<tr>
<td>or EN.530.231</td>
<td>Mechanical Engineering Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>A course in Statics, such as:</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EN.560.201</td>
<td>Statics &amp; Mechanics of Materials</td>
<td></td>
</tr>
</tbody>
</table>
Design Experience and Engineering Laboratory (Senior Design) (D) (9 credits)

Required courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.305</td>
<td>Environmental Health and Engineering Systems Design</td>
<td>4</td>
</tr>
<tr>
<td>EN.570.419</td>
<td>Environmental Engineering Design I</td>
<td>2</td>
</tr>
<tr>
<td>EN.570.421</td>
<td>Environmental Engineering Design II</td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

The Design and Synthesis sequence is a five-credit project course (2 credits fall semester, 3 credits spring semester) and involves a comprehensive study of the engineering design process from problem definition to final design. The course involves team projects that include written and oral presentations. Students will form small teams that will work with local companies or government agencies in executing the project. Prerequisite: senior standing in the Environmental Engineering major.

Environmental Engineering Requirements (23 credits)

Required courses: (15 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.239</td>
<td>Emerging Environmental Issues</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.303</td>
<td>Environmental Engineering Principles and Applications</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.304</td>
<td>Environmental Engineering Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.353</td>
<td>Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

Environmental Engineering Electives (15 credits): Students take at least two courses from one of the following focus areas, and at least one course from two of the other focus areas, and one more course from any focus area. Courses to be selected in consultation with advisor. Changes in courses must be accompanied by a Waiver/Substitution Form.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH.182.615</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH.182.622</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH.188.680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH.182.625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x Note: 600-level courses require permission of instructor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* These courses are offered on the Bloomberg School of Public Health campus. For more information: <a href="http://www.jhsph.edu/courses">http://www.jhsph.edu/courses</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Technical Electives (TE) (minimum of 12 credits) (selected in consultation with an advisor)

At least three Engineering, Quantitative Studies, or Natural Sciences at or above the 300-level, subject to approval by the department totaling at least 12 credits.

Technical electives must fulfill the following requirements:

1. TEs must total 12 credits of advanced 300-level Engineering, Quantitative Studies, or Natural Sciences courses, and
2. TEs must be approved by the department. (For ABET requirements at least one from: Solid Waste; Hazardous Waste; Air Pollution; Environmental Health Engineering, if not satisfied as part of the Environmental Engineering electives.) Up to six credits of independent study or research may be applied toward engineering requirements (e.g., EN.570.501 Undergraduate Research/EN.570.502 Undergraduate Research, EN.570.505 Undergraduate Independent Study, or Senior Thesis). Note earlier comments for premedical majors.

It is strongly recommended that students take additional advanced classes in computing and numerical methods. EE students are strongly encouraged to take at least one course in organic chemistry (e.g., AS.030.205 Introductory Organic Chemistry I). The organic chemistry course will meet the TE requirement.

Guidance for Technical Electives for the EE Major

Technical electives are intended to provide students with courses with technical content and extend mastery in appropriate subject matter.

- TEs require use of fundamental science or mathematics, have appropriate prerequisites (e.g., university-level calculus, physics, chemistry, or other N or Q courses) and generally at a 300-level or higher.
- TEs must have the appropriate level of rigor which is defined as encompassing both of the following requirements:
  - 5-10 homework assignments; and
  - a culminating project (final project, group project, paper) or final examination. Lecture-only classes (no homework or exams) will not qualify as a TE for the EE major.
- TEs require accumulation and depth of analytical skill or knowledge. In general, this precludes survey courses or courses that have no technical prerequisites that are taught by multiple professors or a series of guest lecturers, or cover a broad spectrum of a topic instead of building mastery in one area.

Exceptions are possible only with the approval of either the Departmental Chair or Director of Undergraduate Studies.
Sample EE Program (Focus Area: Environmental Engineering Science)

Note: This program is based on the assumption that students have not previously completed A.P. courses in calculus, physics, chemistry, etc.

**First Year**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>AS.110.108 Calculus I (Physical Sciences and Engineering (M))</td>
<td>4 AS.110.109 Calculus II (For Physical Sciences and Engineering) (Physical Sciences and Engineering (M))</td>
</tr>
<tr>
<td>3</td>
<td>AS.030.101 Introductory Chemistry I (BS)</td>
<td>3 AS.030.102 Introductory Chemistry II (BS)</td>
</tr>
<tr>
<td>1</td>
<td>AS.030.105 Introductory Chemistry Laboratory I (BS)</td>
<td>1 AS.030.106 Introductory Chemistry Laboratory II (BS)</td>
</tr>
<tr>
<td>3</td>
<td>EN.570.108 Introduction Environmental Engineering (GE)</td>
<td>3 EN.171.101 General Physics: Physical Science Major I (BS)</td>
</tr>
<tr>
<td>3</td>
<td>HS Elective</td>
<td>3 EN.570.210 Computation/ Math Modeling (GE)</td>
</tr>
</tbody>
</table>

**Second Year**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>AS.171.102 General Physics: Physical Science Major II</td>
<td>3 AS.110.202 Calculus III (Calculus of Several Variables (M))</td>
</tr>
<tr>
<td>4</td>
<td>EN.553.291 Linear Algebra and Differential Equations</td>
<td>4 EN.510.312 Thermodynamic: Materials (GE)</td>
</tr>
<tr>
<td>1</td>
<td>AS.173.112 General Physics Laboratory II (BS)</td>
<td>1 EN.570.239 Emerging Environmental Issues (EER)</td>
</tr>
<tr>
<td>3</td>
<td>EN.560.201 Statics Mechanics of Materials (GE)</td>
<td>3 HS Elective 2</td>
</tr>
<tr>
<td>3</td>
<td>EN.570.205 Ecology (BS)</td>
<td>3 HS Elective 3</td>
</tr>
</tbody>
</table>

**Third Year**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>EN.570.301 Environmental Engineering Fundamentals I (EER)</td>
<td>3 Probability/Statistics (M)</td>
</tr>
</tbody>
</table>

**Fourth Year**

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>EN.570.305 Environmental Health and Engineering Systems Design (D)</td>
<td>4 EN.570.334 Engineering Microeconomics (HS Elective 4)</td>
</tr>
<tr>
<td>3</td>
<td>EN.570.334 Engineering Microeconomics (HS Elective 4)</td>
<td>3 EN.570.351 Introduction to Fluid Mechanics (GE)</td>
</tr>
<tr>
<td>3</td>
<td>3 EN.570.351 Introduction to Fluid Mechanics (GE)</td>
<td>3 EN.570.304 Environmental Engineering Laboratory (EER)</td>
</tr>
<tr>
<td>3</td>
<td>Environmental or Technical Elective (EEE or TE)</td>
<td>3 EN.570.304 Environmental Engineering Laboratory (EER)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>HS Elective 5</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
</tr>
<tr>
<td>3</td>
<td>Environmental or Technical Elective (EEE or TE)</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
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<tr>
<td>16</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
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<td>16</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
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</tr>
<tr>
<td>14</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
</tr>
<tr>
<td>14</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
<td>3 Environmental or Technical Elective (EEE or TE)</td>
</tr>
</tbody>
</table>

**Minor in Environmental Engineering**

Environmental engineers play particularly pivotal roles as professionals who bridge the gap between understanding complex scientific concepts and helping to formulate public policies that affect the environment. Environmental engineering has become an important aspect of engineering practice in most engineering fields, and the discipline spans the professional spectrum from the private sector through governmental agencies to academia. An undergraduate minor in environmental engineering allows engineering students to pursue an interest in this field and to incorporate aspects of environmental engineering into careers in other engineering disciplines.
Students in any undergraduate major in the Whiting School of Engineering are eligible for admission to the environmental engineering minor program. Students will work with an advisor in the Department of Environmental Health and Engineering to develop a program that meets the requirements for the minor and is consistent with the educational requirements of their major field of engineering study.

Requirements of the EE minor program consist of:

- a set of required core science and mathematics courses, already common to civil and chemical engineering majors;
- four required courses in environmental engineering (total of 12 credits, listed below); and
- two elective courses, one taken at the freshman or sophomore level, and the other taken at the junior or senior level.

**Core Courses (EE Minor)**

Advanced placement credits and/or equivalent courses in other schools or departments are acceptable, subject to advisor approval.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>AS.030.102</td>
<td>Introductory Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.106</td>
<td>Introductory Chemistry Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>AS.171.101</td>
<td>General Physics:Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>AS.171.107</td>
<td>General Physics for Physical Sciences Majors (AL)</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
</tr>
</tbody>
</table>

**Required Courses (total of 12 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>EN.570.301</td>
<td>Environmental Engineering Fundamentals I</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.302</td>
<td>Water &amp; Wastewater Treatment</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.304</td>
<td>Environmental Engineering Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.305</td>
<td>Environmental Health and Engineering Systems Design</td>
<td>4</td>
</tr>
</tbody>
</table>

**Elective Courses**

(Total of 6 credits) one course from each of two groups is required. Double counting of these courses with specified required courses in the student’s major is not allowed. Substitution for one required course may be possible under special circumstances, with explicit approval of the environmental engineering minor advisor. Additional course electives are possible but require approval of the environmental engineering minor advisor.

**Group A**

Introductory courses at the freshman and sophomore level. One course required.*

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.108</td>
<td>Introduction Environmental Engineering</td>
<td></td>
</tr>
<tr>
<td>EN.570.205</td>
<td>Ecology</td>
<td></td>
</tr>
</tbody>
</table>

**Group B**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.570.353</td>
<td>Hydrology</td>
<td></td>
</tr>
<tr>
<td>EN.570.411</td>
<td>Engineering Microbiology</td>
<td></td>
</tr>
<tr>
<td>EN.570.442</td>
<td>Environmental Organic Chemistry</td>
<td></td>
</tr>
<tr>
<td>EN.570.443</td>
<td>Aquatic and Biofluid Chemistry</td>
<td></td>
</tr>
<tr>
<td>EN.570.445</td>
<td>Physical and Chemical Processes I</td>
<td></td>
</tr>
<tr>
<td>EN.570.490</td>
<td>Solid Waste Engineering and Management</td>
<td></td>
</tr>
<tr>
<td>EN.570.491</td>
<td>Hazardous Waste Engineering and Management</td>
<td></td>
</tr>
<tr>
<td>AS.030.204</td>
<td>Chemical Structure and Bonding w/Lab</td>
<td></td>
</tr>
<tr>
<td>AS.030.205</td>
<td>Introductory Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>AS.030.301</td>
<td>Physical Chemistry I</td>
<td></td>
</tr>
<tr>
<td>AS.270.369</td>
<td>Geochem Earth/Environment</td>
<td></td>
</tr>
<tr>
<td>EN.540.301</td>
<td>Kinetic Processes</td>
<td></td>
</tr>
<tr>
<td>EN.540.303</td>
<td>Transport Phenomena I</td>
<td></td>
</tr>
</tbody>
</table>

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**Minor in Environmental Sciences**

The environmental sciences minor has been developed to encourage and facilitate studies in environmental sciences by students completing degrees in the other science and engineering disciplines. The environmental sciences (ES) minor requires:

- completion of a set of courses in the core sciences,
- two introductory courses dealing with the environment, and
- three or more upper-level environmental sciences courses, as described.

**Core Sciences (ES Minor)**

Because of the interdisciplinary nature of environmental science, it is important that professionals from various areas of expertise acquire a common language and set of core concepts to make discussion and cooperation possible. The following courses represent the minimum set of requirements:

**Mathematics (12 credits)**

<table>
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<td>4</td>
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<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
</tbody>
</table>

At least one of the following courses:

- AS.110.201  Linear Algebra
- AS.110.210 Honors Linear Algebra
- AS.110.202  Calculus III
- AS.110.211 Honors Multivariable Calculus
- AS.110.302  Differential Equations and Applications
One course, such as:
AS.020.151 General Biology I 3

Physics (10 credits)
AS.171.101 General Physics: Physical Science Major I 4
or AS.171.107 General Physics for Physical Science Majors (AL) 4
AS.171.102 General Physics: Physical Science Major II 4
or AS.171.108 General Physics for Physical Science Majors (AL) 4
AS.173.111 General Physics Laboratory I 1
AS.173.112 General Physics Laboratory II 1

Chemistry (13 credits)
AS.030.101 Introductory Chemistry I 3
AS.030.105 Introductory Chemistry Laboratory I 1
AS.030.106 Introductory Chemistry Laboratory II 1

Total Credits 30

Environmental Sciences
Students must take two introductory courses dealing with the environment and three or more of the upper-level environmental science courses on the following lists:

Introductory Courses (6 credits)
EN.570.110 Introduction to Engineering for Sustainable Development
EN.570.205 Ecology
EN.570.239 Emerging Environmental Issues
AS.270.110 Freshman Seminar: Sustainable + Non-Sustainable Resources
AS.270.220 The Dynamic Earth: An Introduction to Geology
AS.270.221 The Dynamic Earth Laboratory

Upper-Level Courses (9 credits)
EN.570.239 Emerging Environmental Issues
EN.570.301 Environmental Engineering Fundamentals I
EN.570.302 Water & Wastewater Treatment
EN.570.328 Geography & Ecology of Plants
EN.570.353 Hydrology
EN.570.411 Engineering Microbiology
EN.570.441 Environmental Inorganic Chemistry
EN.570.442 Environmental Organic Chemistry
EN.570.443 Aquatic and Biofluid Chemistry
EN.570.445 Physical and Chemical Processes I
EN.570.446 Biological Process of Wastewater Treatment
EN.570.491 Hazardous Waste Engineering and Management
AS.270.302 Aqueous Geochemistry
AS.270.311 Geobiology
AS.270.313 Isotope Geochemistry
AS.270.350 Sedimentary Geology
AS.270.369 Geochem Earth/Environmen

Environmental Health and Engineering
Environmental modeling, risk assessment, environmental systems design, pollution control strategies. Illustrative majors: Civil Engineering, Applied Mathematics and Statistics.

Faculty Advising
A faculty advisor is assigned to each student in the environmental sciences minor program to assist in planning his/her academic program and to approve the choice of courses to satisfy the minor. Faculty advisors are available in the following areas:

Minor in Engineering for Sustainable Development
Engineers will be increasingly called upon to help devise solutions to the tremendous problems of poverty, inequality, and social and environmental dislocation that afflict major parts of the globe in the 21st century. Working as an engineer in this context involves negotiating highly complex social, economic, and political realities and dealing with a wide range of institutions and actors, including national and local governments, multilateral lenders such as the World Bank, diverse non-governmental organizations (NGOs), and local communities. It also increasingly involves working in interdisciplinary teams with social scientists, public health and medical workers, humanitarian aid workers, bankers, politicians, and the like. “Sustainable” development implies a development path that is socially equitable, culturally sensitive, and environmentally appropriate over a multi-generational time frame. The minor in Engineering for Sustainable Development exposes engineering students to some of the key issues related to development, methods of information-gathering in diverse and difficult settings, and working effectively with non-engineers on complex problems.

The minor encompasses seven courses. The core course is EN.570.110 Introduction to Engineering for Sustainable Development. Five additional courses will be selected in a program devised in consultation with the minor advisor.

Of the Five Additional Courses
• Three must be grouped around a specific theme, region or within a specific discipline. Themes might include, for example, public health, environment, or economic development. Regions include Africa, Latin America, or Asia. Disciplinary concentrations might be in Anthropology, Economics, Geography, History, Political Science, Public Health, or Sociology.
• Three of the courses must be at the 300-level or above.
• One of the courses must cover methods for gathering and evaluating information in a development context.

Examples include:

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>AS.070.347</td>
<td>Anthropology and Public Action</td>
<td>3</td>
</tr>
<tr>
<td>AS.280.345</td>
<td>Public Health Biostatistics</td>
<td>4</td>
</tr>
<tr>
<td>AS.280.350</td>
<td>Fundamentals of Epidemiology</td>
<td>4</td>
</tr>
<tr>
<td>AS.230.202</td>
<td>Research Methods for the Social Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>

**Graduate Programs**

Because of the department's unique cross-divisional affiliation, EHE is able to offer a wide array of masters and doctoral programs at the intersection of public health and engineering. With programs based both on the Bloomberg School of Public Health's East Baltimore campus and on the Whiting School of Engineering's Homewood campus, our graduate students benefit from expertise that is deep and broad in areas that include everything from the science of biological processes and environmental engineering to environmental and health policy and data analytics.

Graduates of the department have found jobs in university departments of civil and environmental engineering, economics, biology, chemistry, geography, and geology; in federal, state, and municipal government; in private industry; and in private research and consulting organizations.

**Ph.D. Degree**

The goals for students in our Ph.D. program are:

• to develop reasoning skills that can be applied to new and unanticipated issues;
• learn how to pose questions and answer them in a logical manner;
• acquire a depth of understanding and technical knowledge in a particular study area, on par with others worldwide; and
• make a significant contribution to our understanding in this particular study area. The emphasis in the Ph.D. degree is upon a sound foundation in the fundamentals required in a given area with considerable flexibility in course selection determined by the interests and background of each graduate student. The doctoral student must take the equivalent of about two full academic years of formal course work. Roughly half of this is done in the principal subject, and the rest is chosen from allied fields. Students may request to move to non-resident status in their final semester, with the approval of the department and Dean's Office once they have completed all exams and a defense date has been scheduled.

All students must pass departmental and Graduate Board oral examinations for the doctorate. Usually these examinations are taken after two years of academic work. Research leading to the dissertation should make an original contribution to the chosen field of specialization, and the result must be worthy of publication. A final dissertation defense that involves an open seminar and a closed oral examination is required of all EHE doctoral students. More information can be found in the departmental advising manual.

**Master of Science (M.S.) Degree**

The M.S. degree is open to students with undergraduate degrees in engineering, mathematics, biology, chemistry, physics, geology, and other scientific disciplines. The M.S. degree program includes the following requirements:

• a minimum of 30 graduate credits including no more than 1 credit of seminar, 1 credit of intersession course work or 1.5 credits from CLE (with advisor approval), and 6 credits of independent research counting toward the 30 credits.
• at least 50% of the required 30 credits must come from courses within the department.
• students are permitted to apply up to two classes with a grade of “C” toward their degree.
• up to two courses from AAP or EP may be taken and counted to receive a master’s degree as long as there is sufficient rigor and prior approval as deemed by the advisor. Students must have written consent from advisor (an email will suffice) prior to signing up for the course.

M.S. students have the option to complete an independent research project, submitted as a formal essay. A minimum of two semesters is required to complete the M.S. degree without the research project option. Three to four semesters are typically required to complete the degree with a research project.

M.S. students are strongly recommended to take mathematics-specifically differential equations and computing skills- as prerequisites for the M.S. program. Additionally, M.S. students who choose to follow Contaminant Fate and Transport, Environmental Process Engineering, and Water Resources Engineering concentrations are encouraged to take an introductory fluid mechanics course. Whether introductory fluid mechanics will count towards an M.S. student’s graduation credits is decided on a case-by-case basis by the department. Each individual’s program of study is planned by the student in consultation with department faculty and must be approved by the faculty advisor.

**Concentrations for the M.S. Degree**

**Environmental Science**

This concentration provides a broad yet rigorous background for environmental professionals. Using the department’s areas of interest, study, and research as guides and in consultation with their advisors, M.S. students can construct their own concentration that complements and expands their interests and professional goals. Additionally, M.S. students can choose to follow or pull from the M.S.E. concentration tracks: Contaminant Fate & Transport, Environmental Management and Economics, Environmental Process Engineering, and Water Resources Engineering.

**Environmental Science and Policy**

This concentration is similar to Environmental Science but includes economics and systems courses.

**Master of Science in Engineering (M.S.E.) Degree**

The M.S.E. degree is open to students with an ABET-accredited undergraduate engineering degree or demonstrated equivalent (as determined by the department). The M.S.E. degree program includes the following requirements:

• a minimum of 30 graduate credits including no more than 1 credit of seminar, 1 credit of intersession course work or 1.5 credits from CLE (with advisor approval), and 6 credits of independent research counting toward the 30 credits.
• at least 50% of the required 30 credits must come from courses within the department.
• students are permitted to apply up to two classes with a grade of “C” toward their degree.
• 5-6 required courses and 4-5 recommended elective courses depending on concentration (Note: In order to substitute an alternate course for a recommended elective, students must receive written approval from their advisor).
• prerequisites (required) for the M.S.E. program include mathematics: differential equations and computing skills.
• up to two courses from AAP or EP may be taken and counted to receive a master's degree as long as there is sufficient rigor and prior approval as deemed by the advisor. Students must have written consent from advisor (an email will suffice) prior to signing up for the course.

The M.S.E. program is typically a two semester program based on course work alone. However, M.S.E. students have the option to complete an independent research project, submitted as a formal essay or group project report. An M.S.E. degree with significant research components will usually require three to four semesters for completion and is generally intended for those students planning to work in engineering practice. Each individual's program of study is planned by the student in consultation with department faculty and must be approved by the faculty advisor. M.S.E. students select from the concentrations below.

Concentrations for the M.S.E. Degree

Contaminant Fate and Transport
This concentration emphasizes understanding of physical, chemical, and biological phenomena that affect the movement and transformation of pollutants in the environment.

Environmental Process Engineering
This concentration involves the analysis and design of processes of water treatment, waste treatment, and environmental remediation, and includes a solid grounding in the chemical, biological, and physical principles underlying treatment and remediation technologies.

Water Resources Engineering
This concentration combines a solid grounding in environmental fluid mechanics and hydrology with electives in modeling, water development planning, policy, and contaminant fate and transport.

Environmental Management and Economics
This concentration focuses on using models of physical and economic systems to analyze and improve the design of public policies and environmental control systems.

M.A. Degree
The M.A. degree is open to students with undergraduate degrees in social sciences or the humanities. It requires:

• a minimum of 30 graduate credits including no more than 1 credit of seminar, 1 credit of intersession course work or 1.5 credits from CLE (with advisor approval), and 6 credits of independent research counting toward the 30 credits.
• at least 50% of the required 30 credits must come from courses within the department.
• students are permitted to apply up to two classes with a grade of “C” toward their degree.
• up to two courses from AAP or EP may be taken and counted to receive a master’s degree as long as there is sufficient rigor and prior approval as deemed by the advisor. Students must have written consent from advisor (an email will suffice) prior to signing up for the course.

M.A. students have the option to complete an independent research project, submitted as a formal essay. Students can focus on one of the department’s areas of interest, study, or research or construct their own program that complements and expands their undergraduate experience; three semesters are typically required to complete the degree. Each program of study is planned by the student in consultation with department faculty and must be approved by the faculty advisor.

For more detailed information about our Graduate programs, including course requirements and research opportunities, visit our website at ehe.jhu.edu

Financial Aid
Financial aid is granted on the basis of merit and availability. Criteria for consideration for these awards include academic excellence, professional or research experience, and career commitment to the field. Ph.D. students receive full financial support. Partial tuition fellowships are offered to qualified master's students.

Furthermore, many students within the department have been awarded graduate research fellowships available to Ph.D. and Masters students through programs administered by the National Science Foundation and the Environmental Protection Agency.

Faculty

Chair
Marsha Wills-Karp
Anna M. Baetjer Professor in Environmental Health and Engineering: allergy, asthma, immunology, pulmonary biology, environmental health, air pollution, genetics of asthma, microbiome

Professors
Jacqueline Agnew
aging workers, occupational health, environmental health, occupational stress, musculoskeletal disorders, ergonomics, neurotoxins

Shyam S. Biswal
electronic cigarettes, cigarette smoke, lung diseases, inflammation, cancer, COPD, emphysema, asthma

Edward J. Bouwer
Abel Wolman Professor of Environmental Engineering: environmental microbiology, waste treatment

Patrick N. Breysse,
industrial hygiene, exposure assessment, pollution, childhood asthma, environmental epidemiology

Grace S. Brush
ecology, paleoecology, plant geography

Srinivasan Chandrasegaran
restriction enzymes, methylases, chimeric nucleases, targeted recombination, zinc finger nucleases, targeted gene correction, targeted gene disruption, homologous recombination

Arthur Dannenberg
tuberculosis, BCG, sulfur mustard, cytokines, adhesion molecules, allergic dermatitis, macrophages and lymphocytes cell mediated immunity, CMI delayed-type hypersensitivity DTH

J. Hugh Ellis
environmental systems

Paul Ferraro
Bloomberg Distinguished Professor of Water and Environmental Economics: evaluation of environmental program impacts, behavioral economics

Robert Fitzgerald, carotid body, chemotransduction, cardiopulmonary control, acetylcholine, catecholamines, gene-based differences in ventilatory response to hypoxia and in morphology/function of the carotid body

Alan Goldberg, toxicology, humane science, in vitro, Center for Alternatives to Animal Testing

John Groopman, chemical carcinogenesis, environmental carcinogenesis, chemoprevention, cancer prevention and control

Steve H. Hanke, applied micro- and macroeconomics and finance

Thomas Hartung

Benjamin F. Hobbs, Theodore K. and Kay W. Schad Professor of Environmental Management: environmental, energy, and water systems, economics

Thomas Inglesby, public health preparedness, global health security, biosecurity and biosafety, emerging infections, pandemic influenza, medicine and vaccine development policy, science diplomacy, preparedness indices, exercises, national policy

Thomas Kensler, chemical carcinogenesis, chemoprevention, hepatocarcinogenesis, reactive oxygen, antioxidants, enzyme induction, aflatoxin, olitipraz, chlorophyllin, sulforaphane, Keap1, Nrf2, triterpenoids

Peter Lees, industrial hygiene, occupational and environmental hygiene, exposure assessment, retrospective exposure assessment, surface contamination, dermal exposure, synthetic vitreous fibers, chromium

Jonathan Links, imaging, dosimetry, radiation, dirty bombs, nuclear medicine, radiological terror, public health preparedness

Wayne Mitzner, the structural basis of physiologic lung function, how this normal structure manifests itself in pathologic situations and environmental exposures

Gurumurthy Ramachandran, exposure assessment, occupational health, exposure models air pollution, Bayesian applications in exposure assessment, nanoparticles, occupational exposures, indoor air pollution, cookstove emissions, exposome

A. Lynn Roberts, environmental chemistry

Erica J. Schoenberger, economic geography, environmental history, environmental politics and policy, history of mining, history of the automobile, interdisciplinary scientific collaboration

Kellogg J. Schwab

Abel Wolman Professor in Water and Public Health: environmental microbiology, microbial fate and transport, water quality, drinking water treatment, disinfection, groundwater, wastewater, sewage, water and wastewater distribution systems, gastroenteritis, diarrhea, enteric pathogens, parasites (cryptosporidium, toxoplasma, giardia), viruses (norovirus, norwalk-like viruses, hepatitis A virus, rotavirus), bacterial indicators of water quality, bacteriophage, antibiotic resistant bacteria, molecular detection of microorganisms (PCR, RT-PCR, microarrays, hybridization), infectious diseases, microbial risk assessment, food borne and waterborne outbreak investigations, urban environmental pollution, airborne microorganisms, concentrated animal feeding operations (CAFO), Chesapeake Bay research

Brian Schwartz, biological markers, cognitive functioning, gene-environment interaction, genetic susceptibility, lead intoxication, molecular epidemiology, neurobehavioral testing, occupational epidemiology, occupational safety and health, retrospective assessment of exposure, solvents, chemicals, global warming, global environmental change, the built environment, unconventional fossil fuels, fracking, environmental epidemiology

Ellen Silbergeld, industrial farming, food safety, molecular devices for pathogen detection, disease modeling, antibiotic-resistant bacteria, heavy metals, environmental and occupational health

Alan T. Stone, environmental and aquatic chemistry

Paul Strickland, environmental and occupational health, molecular biomonitoring, genotoxic agents, carcinogens, genetic polymorphisms, carcinogen metabolites, genetic damage in human populations, molecular epidemiology, exposome

James D. Yager, estrogens, estrogen, estradiol, estrogen metabolism, catechol-O-methyltransferase (COMT), catechols, estrogen receptor, estrogen receptors, carcinogenesis, liver cancer, breast cancer, genetic polymorphisms, environmental disease: molecular mechanisms, pathophysiology molecular, translational toxicology, training program in environmental health sciences

Associate Professors

Steven S. An, exposome and cellular engineering

Daniel Barnett J., public health practice, preparedness, emergency response, training, exercises, evaluation, terrorism preparedness, all-hazards readiness, mental health, organizational change, public health workforce

Joseph P Bressler, neurodevelopmental disorders, epigenetics, biomarkers, environmental toxicology

Gigi Kwik Gronvall, biosecurity, biodefense, biosafety, synthetic biology, emerging biotechnologies, national security, international security, medical countermeasure research and development, science policy

Christopher D. Heaney
environmental epidemiology, occupational and environmental health, infectious diseases Water and health, global climate change, community-based participatory research

Paul A. Locke
environmental law, environmental policy, risk assessment, risk management, radon, radiation, alternatives to animal testing, regulation, uranium mining, space radiation

Norma F. Kanarek
environmental health sciences, public health practice, public health performance, surveillance tracking, community health, community health assessment, applied epidemiology, cancer

Jennifer Nuzzo
public health preparedness, emerging infectious disease, tuberculosis, water security, quarantine, biosurveillance, infectious disease diagnostics, International health regulations, global health security, Affordable Care Act, epidemiology, outbreak detection, outbreak response

Winnie Wan-yeecomeric reprogramming in development and disease, epigenetic epidemiology, DNA methylation, DNA hydroxymethylation, transgenerational inheritance, house dust mite, airborne PAHs, arsenic, endocrine disrupting chemicals, asthma, cardiovascular disease, cancer

Assistant Professors
Jessie Buckley P.
biomarkers, children's environmental health, developmental origins of health and disease, endocrine disruptors, environmental epidemiology, environmental phenols, epidemiologic methods, exposure assessment, exposure mixtures, obesity, occupational epidemiology, perinatal and pediatric epidemiology, phthalates

Meghan Frost Davis
antimicrobial resistance, asthma, environmental epidemiology, environmental microbiology, microbial ecology, microbiome, MRSA, MRSP, one health, staphylococci, veterinary medicine

Ciaran Harman
Russell Croft Faculty Scholar: landscape hydrology and transport

Kirsten Koehler
exposure assessment, aerosols, air quality, spatial statistics

Mark J. Kohr
cardiovascular disease, cardiac physiology, electrophysiology, proteomics, reactive nitrogen species, nitric oxide, s-nitrosylation, reactive oxygen species, nitroso-redox balance, oxidative stress, sex differences

Scot Miller
greenhouse gases, air pollution, atmospheric science

Keeve E. Nachman
arsenic, food systems, risk science, risk assessment, environmental epidemiology, industrial food animal production, animal waste, animal feed, foraging, urban gardens, agriculture, biosolids, veterinary drugs, Chesapeake Bay watershed protection, antimicrobial resistance, exposure assessment, regulatory toxicology, regulatory policy, chemical residues in food

Roni A. Neff
food system, food waste, meat, climate change, agriculture, policy, communication, sustainability, health disparities, Baltimore, history, occupational injury and illness, resilience

Carsten Prasse
environmental chemistry, exposome science, water treatment, environmental health

Sarah Preheim
environmental microbiology, microbial ecology, bioinformatics

Caitlin Rivers
epidemiology, infectious disease modeling, outbreak science, public health preparedness, public health response, open data, biosafety, biodefense, public health policy, national security

Tara Kirk Sell
biosecurity, biodefense, public health preparedness, emerging infectious disease, federal funding, nuclear consequence management, Zika, Ebola, communication, risk, public health policy, emergency response

Fenna Sillé
immunology, immunotoxicology, arsenic, infectious disease, tuberculosis, early-life exposures, metabolomics

Genee S. Smith
climate change, environmental epidemiology, infectious disease, air pollution, extreme weather events

Zhibin Wang
human epigenome, epigenetic code, establishment mechanism of histone codes/patterns, environmental disease, next-generation sequencing, histone acetylation, HATs and HDACs, transcriptional regulation, DNA methylation, asthma, cancer, autoimmune diseases, HIV/AIDS

Crystal Watson
public health and medical preparedness, risk assessment and management, crisis decision making, emergency response, CBRN events, global catastrophic biological risk, terrorism preparedness, emerging infectious diseases, policy and funding analysis

Professor Emeritus
John J. Boland
environmental economics and policy

Research Professor
William P. Ball
environmental engineering, physical and chemical processes, water quality

Associate Teaching Professor
Hedy V. Alavi
Associate Teaching Professor: hazardous and solid waste engineering and management

Senior Research Associate
Katya Tsaioun
mechanisms of toxicity, integration of different streams of Evidence in toxicology and nutrition, determination of risk of bias of toxicological and nutrition studies, grading the evidence, food safety, developing public policy to change consumer behavior

Research Associates
Mary L. Doyle
Courses

EN.570.108. Introduction Environmental Engineering. 3.0 Credits.
Overview of environmental engineering including water/air quality issues, water supply/ wastewater treatment, hazardous/solid waste management, pollution prevention, global environmental issues, public health considerations/environmental laws, regulations and ethics. Cross-listed with Public Health Studies.
Instructor(s): H. Alavi
Area: Engineering.

EN.570.110. Introduction to Engineering for Sustainable Development. 3.0 Credits.
Instructor(s): E. Schoenberger
Area: Humanities, Social and Behavioral Sciences.

EN.570.130. Climate, Environment and Society. 3.0 Credits.
Climate change will put major stress on the environment and society. Some predict wars over water and climate-induced mass migration. What can the past teach us about how we cope or fail to cope with climate change? What do we think the future holds and what do we think we can do about it? The class involves reading, discussion, debate and research. Freshman only.
Instructor(s): E. Schoenberger
Area: Humanities, Social and Behavioral Sciences.

EN.570.147. Adam Smith & Karl Marx. 3.0 Credits.
Smith and Marx are iconic figures in the history of political economic thought, often cited, rarely read. They are positioned as polar opposites in highly consequential debates about how society should be ordered. In this class, we will read and discuss their work, closely and carefully. We concentrate on the two iconic texts – The Wealth of Nations and Capital, Vol. 1 – but also explore some of their less well-known writings. Freshmen Only.
Instructor(s): E. Schoenberger, P. Jelavich
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

EN.570.205. Ecology. 3.0 Credits.
Introduction to processes governing the organization of individual organisms into populations, communities, and ecosystems. Interactions between individual organisms, groups of organisms, and the environment, including adaptation, natural selection, competition.
Instructor(s): G. Brush
Area: Natural Sciences.

EN.570.210. Computation/Math Modeling. 3.0 Credits.
An introduction to the use of computers in developing mathematical models. A structured approach to problem definition, solution, and presentation using spreadsheets and mathematical software. Modeling topics include elementary data analysis and model fitting, numerical modeling, dimensional analysis, optimization, simulation, temporal and spatial models. Recommended Course Background: AS.110.108 or equivalent.
Instructor(s): M. Beaudin
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.222. Environment and Society. 3.0 Credits.
Humans make their living in the environment. How we do that changes nature and changes us. This class explores human impacts on the environment, how we have thought about our relationship to nature over the millennia, and contemporary environmental discourses.
Instructor(s): E. Schoenberger
Area: Humanities, Social and Behavioral Sciences.
EN.570.239. Emerging Environmental Issues. 3.0 Credits.
Scientific principles underpinning environmental issues, with an emphasis on potential impacts of anthropogenic perturbation on human and ecosystem health. Recommended Course Background: two semesters of Chemistry.
Instructor(s): A. Roberts
Area: Engineering, Natural Sciences.

EN.570.285. Understanding Aid: Anthropological Perspectives for Technology-Based Interventions. 3.0 Credits.
This course combines anthropological perspectives with the discussion and examination of technology-based interventions in the field of development and aid policies, with particular focus on activities related to water resources, sanitation, and hygiene. Readings and discussions analyze some of the theoretical, historically rooted, and practical issues that challenge those who hope to provide effective aid. A key aim of this course is to provide students with better understanding of social, cultural, environmental and economic issues relevant to technical intervention in developing countries.
Instructor(s): E. Cervone; W. Ball
Area: Humanities, Social and Behavioral Sciences.

EN.570.301. Environmental Engineering Fundamentals I. 3.0 Credits.
Fundamentals and applications of physical, chemical and biological processes in the natural environment and engineered systems. This class will cover material balances, chemical equilibrium, chemical kinetics, vapor pressure, dissolution, sorption, acid-base reactions, transport phenomena, reactor design, water quality, and environmental implications of nanotechnology.
Instructor(s): K. Chen
Area: Engineering, Natural Sciences.

EN.570.302. Water & Wastewater Treatment. 3.0 Credits.
Theory and design of water and wastewater treatment processes including coagulation, sedimentation, filtration, adsorption, gas transfer, aerobic and anaerobic biological treatment processes, disinfection, and hydraulic profiles through treatment units.
Prerequisites: EN.570.301 or permission required.
Instructor(s): W. Weiss
Area: Engineering, Natural Sciences.

EN.570.303. Environmental Engineering Principles and Applications. 3.0 Credits.
Fundamentals and applications of physical, chemical, and biological processes in the natural environment and engineered systems. The first part of this class will cover material balances, chemical equilibrium, chemical kinetics, vapor pressure, dissolution, sorption, acid-base reactions, transport phenomena, reactor design, and water quality. The second part of this class focuses on the principles and design of water and wastewater treatment processes, such as coagulation, sedimentation, filtration, biological treatment processes, and disinfection.
Instructor(s): C. Prasse
Area: Engineering, Natural Sciences.

EN.570.304. Environmental Engineering Laboratory. 3.0 Credits.
Introduction to laboratory measurements relevant to water supply and wastewater discharge, including pH and alkalinity, inorganic and organic contaminants in water, reactor analysis, bench testing for water treatment, and measurement and control of disinfection by-products. Recommended Course Background: EN.570.210 or Instructor Permission.
Prerequisite: EN.570.303.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): A. Roberts
Area: Engineering, Natural Sciences.

EN.570.305. Environmental Health and Engineering Systems Design. 4.0 Credits.
Techniques from systems analysis applied to environmental engineering design and management problems: reservoir siting, nuclear waste management, air pollution control, and transportation planning. Design projects are required.
Instructor(s): J. Ellis
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.314. Microbial Ecology. 3.0 Credits.
This course will highlight the latest methods in biotechnology revealing ecological principles determining the diversity and dynamics of microbial communities in a variety of ecosystems. We will explore advanced topics in ecology, such as niche theory, cooperation and speciation with examples from human health, engineering and environmental microbiology. Recommended Course Background: Ecology - EN.570.205 or Microbiology - AS.020.329
Instructor(s): S. Preheim
Area: Natural Sciences.

EN.570.328. Geography & Ecology of Plants. 3.0 Credits.
Patterns of aquatic and terrestrial plant species; historical changes in patterns using paleobotanical techniques; emphasis on biological and physical mechanisms controlling the patterns; the role of climate and man on plant distributions; several field trips; project required, which is the basis for the final grade.
Instructor(s): G. Brush
Area: Natural Sciences.

EN.570.334. Engineering Microeconomics. 3.0 Credits.
This course uses a calculus-based approach to introduce principles of engineering economics and microeconomics (demand and production theory) and their uses in engineering decision making. Recommended Course Background: AS.110.202
Instructor(s): B. Hobbs; P. Ferraro
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

EN.570.351. Introduction to Fluid Mechanics. 3.0 Credits.
Introduction to the use of the principles of continuum, momentum, and energy to fluid motion. Topics include hydrostatics, ideal-fluid flow, laminar flow, turbulent flow. Recommended Course Background: Statics, Dynamics, and AS.110.302
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. Kim
Area: Engineering.

EN.570.353. Hydrology. 3.0 Credits.
The occurrence, distribution, movement, and properties of the waters of the Earth. Topics include precipitation, infiltration, evaporation, transpiration, groundwater, and streamflow. Analyzes include the frequency of floods and droughts, time-series analyzes, flood routing, and hydrologic synthesis and simulation. Recommended Course Background: AS.110.302, EN.570.351
Instructor(s): C. Harman
Area: Engineering.
EN.570.395. Principles of Estuarine Environment: Chesapeake Bay. 3.0 Credits.
Topics include the physical, chemical, and biological components of the Chesapeake Bay ecosystem from the time it started to form some 10,000 to 12,000 years ago, when sea level began to rise as the continental glaciers receded; the geology, geomorphology, and biology of the watershed drained by the estuary; relationships between the watershed and the estuary through the millennia and the effect of climate, geomorphology, and humans on the ecology of the ecosystem and its economic productivity.
Instructor(s): G. Brush
Area: Engineering, Natural Sciences.

EN.570.402. Practicum on Appropriate and Sustainable Technology for Developing Communities. 2.0 Credits.
Suggested: Microeconomics, Introductory Statistics and Optimization.
Instructor(s): W. Ball
Area: Engineering.

EN.570.403. Ecology. 3.0 Credits.
This is a graduate level of EN.570.205; Additional Writing Requirements.
Instructor(s): G. Brush
Area: Natural Sciences
Writing Intensive.

EN.570.406. Environmental History. 3.0 Credits.
Environmental history explores the interactions between social change and environmental transformation, or the ways in which societies modify landscapes and are themselves affected by geological, climatological and changing ecological conditions. Topics include the relationship between climate change and human evolution, the environmental impacts of market-based commodity production and regional economic specialization; the relationship between urbanization and environmental change; how warfare affects and is affected by environmental conditions.
Instructor(s): E. Schoenberger
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

EN.570.411. Engineering Microbiology. 4.0 Credits.
Fundamental aspects of microbiology and biochemistry as related to environmental pollution and water quality control processes, biogeochemical cycles, microbiological ecology, energetics and kinetics of microbial growth, and biological fate of pollutants.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): E. Bouwer
Area: Engineering, Natural Sciences.

EN.570.412. Landscape Hydrology and Watershed Analysis. 3.0 Credits.
The purpose of this class is to understand the landscape-scale controls on the fluxes of water and waterborne materials through watersheds. This class differs from the Hydrology and Hydrologic Modeling classes in its focus on data analysis, and its embrace of the complexity of real landscapes. There will be significant quantitative components to the material taught, but emphasis will be on developing a greater sense of the way that landscapes "function", and how this function is related to real-world issues of water resources and pollution. Students will gain an understanding of how climate, geologic and ecosystem setting, and human impacts control the partitioning of water between different fates, the flowpaths through the landscape and the storage and residence time of water. They will also learn conceptual and practical tools for analyzing hydrologic and other landscape data, and integrating this data in a holistic approach to watershed analysis. The class will be of interest for students intending to go into watershed or landscape management, and anyone wishing to pursue research in hydrology, geomorphology or ecology at landscape and watershed scales. The class will include at least one field trip to an instrumented watershed. GIS skills will be an advantage but are not required.
Instructor(s): C. Harman.

EN.570.415. Current Trends in Environmental Microbiology. 3.0 Credits.
This course will highlight recent discoveries and advances in environmental microbiology such as the identification of novel microbes, changing paradigms in nitrogen cycling, single-cell activity methods and novel methods in microbial community analysis. We will explore these topics by reading and discussing the current literature, supported by short lectures and in class activities related to the topics. Background in microbiology or microbial ecology is recommended. This course will meet with EN.570.615.
Instructor(s): S. Preheim
Area: Engineering, Natural Sciences.

EN.570.416. Data Analytics in Environmental Health and Engineering. 3.0 Credits.
Data analytics is a field of study involving computational statistics, data mining and machine learning, to explore data sets, explain phenomena and build predictive models. The course begins with an overview of some traditional analysis approaches including ordinary least squares regression and related topics, notably diagnostic testing, detection of outliers and methods to impute missing data. More recent developments are presented, including ridge regression. Generalized linear models follow, emphasizing logistic regression and including models for polynomous data. Variable subsetting is addressed through stepwise procedures and the LASSO. Supervised machine learning topics include the basic concepts of boosting and bagging and several techniques: Decision Trees, Classification and Regression Trees, Random Forests, Conditional Random Forests, Adaptive Boosting, Support Vector Machines and Neural Networks. Unsupervised machine learning approaches are addressed through applications using k-means Clustering, Partitioning Around Medoids and Association Rule Mining. Methods for assessing model predictive performance are introduced including Confusion Matrices, k-fold Cross-Validation and Receiver Operating Characteristic Curves. Public health and environmental applications are emphasized, with modeling techniques and analysis tools implemented in R.
Instructor(s): J. Ellis
Area: Engineering, Quantitative and Mathematical Sciences.
EN.570.418. Multiobjective Programming and Planning. 3.0 Credits.
Public sector problems are typically characterized by a multiplicity of objectives and decision makers. This course presents a relatively new area of systems analysis which is useful for such problems: multiobjective programming or vector optimization theory. The fundamental concepts are developed and various methods are presented, including multiattribute value and utility theory. Undergraduate level of EN.570.618. Recommended Prerequisites: EN.570.495, EN.570.305, EN.553.361.
Prerequisites: EN.570.495 or similar course in operations research/linear programming.
Instructor(s): J. Williams
Area: Engineering.

EN.570.419. Environmental Engineering Design I. 2.0 Credits.
Through general lectures and case study examples, this course will expose students to some of the non-technical professional issues that they will face as professional engineers and in their second-semester senior design project.
Instructor(s): E. Bouwer
Area: Engineering.

EN.570.420. Air Pollution. 3.0 Credits.
The course consists of an introduction to the fundamental concepts of air pollution. Major topics of concern are aspects of atmospheric motion near the earth's surface; basic thermodynamics of the atmosphere; atmospheric stability and turbulence; equations of mean motion in turbulent flow, mean flow in the surface boundary layer; mean flow, turbulence in the friction layer; diffusion in the atmosphere; statistical theory of turbulence; plume rise. Emphasis is placed upon the role and utility of such topics in a systems analysis context, e.g., development of large and mesoscale air pollution abatement strategies. Comparisons of the fundamental concepts common to both air and water pollution are discussed. This course meets with EN.570.657, Air Pollution.
Instructor(s): J. Ellis
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.421. Environmental Engineering Design II. 3.0 Credits.
Engineering design process from problem definition to final design. Team projects include written/oral presentations. Students will form small teams that work with local companies or government agencies in executing the project. Recommended Course Background: EN.570.302, EN.570.352, and EN.570.419
Instructor(s): E. Bouwer; H. Alavi
Area: Engineering.

EN.570.428. Problems in Applied Economics. 3.0 Credits.
This course focuses on a monetary approach to national income determination and the balance of payments. Money and banking, as well as commodity and financial markets, are dealt with under both central banking, as well as alternative monetary regimes. Particular emphasis is placed on currency board systems. Students learn how to properly conduct substantive economic research, utilizing primary data sources, statistical techniques and lessons from economic history. Findings are presented in the form of either memoranda or working papers of publishable quality. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Advanced excel programming skills are required and students are expected to be pre-screened for research at the Library of Congress in Washington, D.C.. Bloomberg certification is a pre-requisite.
Prerequisites: EN.660.203 AND AS.180.101 AND AS.180.102
Instructor(s): S. Hanke
Area: Social and Behavioral Sciences
Writing Intensive.

EN.570.429. Methods in Microbial Community Analysis. 3.0 Credits.
This course will provide a practical knowledge of molecular methods used to identify microorganisms present with a sample and gain insight into their function and dynamics. It will provide theoretical background into how to identify microorganisms and infer functional capabilities from genetic material, practical knowledge of common molecular methods and computational skills needed to analyze the resulting sequence data. No background in molecular biology, computation or microbiology is necessary. Course objectives include (1) understanding key aspects of microbial community composition from literature reports; (2) recognizing major microbial taxonomic groups and understanding phylogenetic relationships; (3) developing molecular biology lab skills required to create gene amplicon libraries from an aquatic samples; (4) working knowledge of statistical methods used to associate taxonomic and functional gene information with specific environmental conditions. Recommended Course Background: Microeconomics, Introductory Statistics, Optimization. Open to undergraduates. Co-listed with EN.570.619
Instructor(s): S. Preheim
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.431. Collaborative Modeling for Resolving Water Resources Disputes. 3.0 Credits.
Overview of collaborative modeling in water resources, Economic issues in water resources disputes, Legal issues in water resources disputes, Biological/Environmental issues in water resources disputes, Water management in the Delaware Basin, Understanding and using the Delaware River Basin Commission's water management tool (an OASIS based model of the Delaware, Multi-objective water management, Understanding management trade-offs, Collaborative processes, Reality based negotiation skills, and Consensus building. Recommended Course Background: A strong interest in utilizing scientific tools to help resolve real-world disputes A background in general science -- with at least two of the following disciplines: Biology, chemistry, physics, earth science, economics.
Instructor(s): D. Sheer
Area: Engineering, Quantitative and Mathematical Sciences.
EN.570.435. Principles of Estuarine Environment: Chesapeake Bay. 3.0 Credits.
Topics include the physical, chemical, and biological components of the Chesapeake Bay ecosystem from the time it started to form some 10,000 to 12,000 years ago, when sea level began to rise as the continental glaciers receded; the geology, geomorphology, and biology of the watershed drained by the estuary; relationships between the watershed and the estuary through the millennia and the effect of climate, geomorphology, and humans on the ecology of the ecosystem and its economic productivity.
Instructor(s): G. Brush
Area: Engineering, Natural Sciences.

EN.570.441. Environmental Inorganic Chemistry. 3.0 Credits.
Advanced undergraduate/graduate course that explores the chemical transformations of elements of the periodic table. Thermodynamic, kinetic, and mechanistic tools needed to address the multiple chemical species and interfaces that are present in natural waters and water-based technological processes are emphasized. Ligand exchange, metal ion exchange, adsorption/desorption, precipitation/dissolution, electron and group transfer reactions, and other concepts from coordination chemistry will be covered. Applications include elemental sources and sinks in ocean waters, reactive transport in porous media, weathering and soil genesis, nutrient and toxic element uptake by organisms, water treatment chemistry, and rational design of synthetic chemicals. Co-listed with EN.570.641
Instructor(s): A. Stone
Area: Natural Sciences.

EN.570.442. Environmental Organic Chemistry. 3.0 Credits.
Advanced undergraduate/graduate course focusing on examination of processes that affect the behavior and fate of anthropogenic organic contaminants in aquatic environments. Students learn to predict chemical properties influencing transfers between hydrophobic organic chemicals, air, water, sediments, and biota, based on a fundamental understanding of intermolecular interactions and thermodynamic principles. Recommended Course Background: AS.030.104 or permission required.
Instructor(s): A. Roberts
Area: Engineering, Natural Sciences.

EN.570.443. Aquatic and Biofluid Chemistry. 3.0 Credits.
Equilibrium speciation of natural waters, biofluids, and engineered systems. Topics include acids, bases, pH, and buffering; the precipitation and dissolution of solids; complexation and chelation; oxidation and reduction reactions; regulation and design. Intended for students from a variety of backgrounds. Recommended Course Background: One year of both Chemistry and Calculus. Meets with EN.570.643 (Aquatic and Biofluid Chemistry).
Instructor(s): A. Stone
Area: Engineering, Natural Sciences.

EN.570.445. Physical and Chemical Processes I. 3.0 Credits.
The application of basic physical and chemical concepts to the analysis of environmental engineering problems. Principles of chemical equilibrium and reaction, reaction engineering, interphase mass transfer, and adsorption are presented in the context of process design for unit operations in common use for water and wastewater treatment. Topics addressed include mass balances, hydraulic characteristics of reactors, reaction kinetics and reactor design, gas transfer processes (including both fundamentals of mass transfer and design analysis), and adsorption processes (including both fundamentals of adsorption and design analysis).
Prerequisites: EN.570.301 AND EN.570.302 or permission of instructor
Instructor(s): W. Ball
Area: Engineering.

EN.570.446. Biological Process of Wastewater Treatment. 3.0 Credits.
Fundamentals and application of aerobic and anaerobic biological unit processes for the treatment of municipal and industrial wastewater.
Recommended Course Background: EN.570.411
Instructor(s): E. Bouwer
Area: Engineering, Natural Sciences.

EN.570.448. Physical and Chemical Processes II. 3.0 Credits.
Fundamentals and applications of physical and chemical processes used in water and wastewater treatment. This class will cover particle interactions, coagulation, flocculation, granular media filtration, membrane processes, and emerging water treatment processes.
Recommended Course Background: EN.570.445 or Permission Required.
Instructor(s): H. Arora
Area: Engineering.

EN.570.449. Social Theory for Engineers. 3.0 Credits.
Engineers work in a social context. This course addresses a number of questions about that social context. How should we understand how societies come about, how they evolve, and why the rules of the game are what they are? What is the relationship between the individual and society, what does it mean to be 'modern,' are there different forms of rationality? How might all this impinge on what it means to be an engineer?
Instructor(s): E. Schoenberger
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

EN.570.452. Experimental Methods in Environmental Engineering and Chemistry. 4.0 Credits.
An advanced laboratory covering principles of modern analytical techniques and their applications to problems in environmental sciences. Topics include electrochemistry, spectrometry, gas and liquid chromatography. The course is directed to graduate students and advanced undergraduates in engineering and natural sciences. Co-listed with EN.570.652
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): A. Stone
Area: Engineering, Natural Sciences
Writing Intensive.
EN.570.454. Geostatistics: Understanding Spatial Data. 3.0 Credits.
Spatial and geographic datasets are becoming increasingly common with improvements in data collection technologies. For example, satellites are able to collect more and more types of earth/environmental data, and web technologies (e.g., social media and e-commerce) provide vast new datasets on social, economic, and public health phenomena. However, many common statistical tools are ill-suited to spatial datasets; these datasets often exhibit complex spatial (and temporal) dependencies that require a special set of tools. In this course, students will learn how to quantitatively analyze, model, and predict spatial and spatiotemporal phenomena. Topics will include quantifying the spatial and temporal properties of data, interpolation and prediction, multivariate models, modeling uncertainty, measurement design, and strategies for very large datasets. We will draw examples from a wide variety of academic disciplines, including environmental engineering, earth science, public health, and political science. Pre-requisites: An introductory course in statistics is recommended. Knowledge of a scientific programming language (e.g., Matlab, R, or Python) will also be helpful.
Instructor(s): S. Miller
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.470. Applied Economics & Finance. 3.0 Credits.
This course focuses on company valuations, using a Probabilistic Discounted Cash Flow Model. Students use the model and primary data from financial statements filed with the Securities and Exchange Commission to calculate the value of publically-traded companies. Using Monte Carlo simulations, students also generate forecast scenarios, project likely share-price ranges and assess potential gains/losses. Stress is placed on using these simulations to diagnose the subjective market expectations contained in current objective market prices, and the robustness of these expectations. During the weekly seminar, students company valuations are reviewed and critiqued. A heavy emphasis is placed on research and writing. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Advanced excel programming skills are required and students are expected to be pre-screened for research at the Library of Congress in Washington, D.C.. Bloomberg certification is a pre-requisite.
Prerequisites: EN.660.203 AND (EN.570.428 OR AS.360.528)
Instructor(s): S. Hanke
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences
Writing Intensive.

EN.570.490. Solid Waste Engineering and Management. 3.0 Credits.
This course covers advanced engineering and scientific concepts and principles applied to the management of municipal solid waste (MSW) to protect human health and the environment and the conservation of limited resources through resource recovery and recycling of waste material.
Instructor(s): H. Alavi
Area: Engineering.

EN.570.491. Hazardous Waste Engineering and Management. 3.0 Credits.
This course addresses traditional and innovative technologies, concepts, and principles applied to the management of hazardous waste and site remediation to protect human health and the environment. Co-listed with EN.570.691
Instructor(s): H. Alavi
Area: Engineering.

EN.570.492. Wolman Seminar - Undergraduates. 1.0 Credit.
Undergraduates only with permission of instructor.
Instructor(s): S. Preheim.

EN.570.493. Economic Foundations for Environmental Engineering and Policy Design. 3.0 Credits.
This course includes an exposition of intermediate level price theory, combined with a survey of applications to the analysis of public sector decisions. Theoretical topics include demand, supply, the function and behavior of the market, and introductory welfare economics.
Recommended Course Background: AS.180.101-AS.180.102, AS.110.202 or equivalent.
Instructor(s): J. Boland
Area: Quantitative and Mathematical Sciences, Social and Behavioral Sciences.

EN.570.495. Environmental Health and Engineering Systems Design. 3.0 Credits.
A collection of systems analytic techniques which are frequently used in the study of public decision making is presented. Emphasis is on mathematical programming techniques. Primarily linear programming, integer and mixed-integer programming, and multiobjective programming.
Recommended Course Background: AS.110.106-AS.110.107/AS.110.109
Instructor(s): J. Ellis
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.496. Urban and Environmental Systems. 3.0 Credits.
The mathematical techniques learned in EN.570.305 and EN.570.495 are applied to realistic problems in urban and environmental planning and management. Examples of such problems include the siting of public-sector and emergency facilities; natural areas management, protection and restoration; solid waste collection, disposal, and recycling; public health; the planning and design of energy and transportation systems; and cost allocation in environmental infrastructure development.
Instructor(s): J. Williams
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.497. Risk and Decision Analysis. 3.0 Credits.
This class introduces the decision analysis approach to making decisions under risk and uncertainty. Topics covered include decision trees, Bayes law, value of information analysis, elicitation of subjective probabilities, multiattribute utility, and their applications to environmental and energy problems. Textbook: R.T. Clemen, Making Hard Decisions, 2014. Recommended Course Background: introductory statistics and probability.
Instructor(s): B. Hobbs
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.501. Undergraduate Research. 3.0 Credits.
Instructor(s): Staff.

EN.570.502. Undergraduate Research. 0.0 - 3.0 Credits.
Instructor(s): Staff.

EN.570.504. Financial Market Research. 3.0 Credits.
This course investigates the workings of financial, foreign exchange, and commodity futures markets. Research is focused on price behavior, speculation, and hedging in these markets. Extensive research and writing of publishable quality are required. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. An approved research proposal is a pre-requisite.
Instructor(s): S. Hanke
Writing Intensive.
EN.570.505. Undergraduate Independent Study. 3.0 Credits.
Instructor(s): Staff.

EN.570.506. Maryland Department of the Environment Independent Study. 0.0 - 3.0 Credits.
This independent study within the MDE's Water Management Administration (WMA) will engage the student in scientific/policy literature and data research and management, field investigations, or evaluation of emerging issues and innovative approaches to surface and ground water protection and drinking water management, wastewater management, wetlands and non-point source pollution control. Each individual course will focus on a scientific, regulatory or policy topic designed to further the mission of the administration, which is to protect the public health and the aquatic environment. The student will be assigned to a WMA engineer, scientist or project manager to develop a course of study. Hours can be tailored to accommodate student's schedule.
Instructor(s): E. Bouwer.

EN.570.507. Independent Study: Baltimore City Energy Office. 3.0 Credits.
This Independent Study within Baltimore City's Energy Office will engage students in local energy policies, energy initiatives, data and City operations. Interns will have the chance to apply optimization and modeling skills to one of many projects. These projects can include: • Measurement and verification of performance contracts with energy service contractors • Collection of data from City operated co-generation and solar plants and developing operation models • Analyzing energy usage data from City buildings and making recommendations As part of an independent student project, students will be required to submit a final report and present their findings to the City. Hours can be tailored to accommodate student's schedule but a minimum of 10 hours per week during the semester is required. Permission required.
Instructor(s): E. Bouwer.

EN.570.510. Internship-Geog/Envr Eng. 0.0 - 3.0 Credits.
Instructor(s): E. Bouwer.

EN.570.511. Group Undergraduate Research. 3.0 Credits.
This section has a weekly research group meeting that students are expected to attend.
Instructor(s): C. Harman.

EN.570.590. Internship - Summer. 1.0 Credit.
Instructor(s): E. Bouwer; G. Brush; K. Chen; S. Guikema.

EN.570.597. Undergraduate Research-Summer. 3.0 Credits.
Instructor(s): Staff.

EN.570.599. Independent Study. 0.0 - 3.0 Credits.
Instructor(s): A. Roberts; B. Hobbs; S. Guikema.

EN.570.601. IGERT Water, Climate and Health Colloquium. 3.0 Credits.
Instructor(s): G. Brush.

EN.570.602. IGERT-Water, Climate & Health-Capstone. 3.0 - 20.0 Credits.
Instructor(s): G. Brush.

EN.570.603. Ecology. 3.0 Credits.
Introduction to processes governing the organization of individual organisms into populations, communities, and ecosystems. Interactions between individual organisms, groups of organisms, and the environment, including adaptation, natural selection, competition.
Instructor(s): G. Brush.

EN.570.604. Interdisciplinary Research Practice in Sustainability and Health. 3.0 Credits.
Through the application of interdisciplinary research methods and skills to case studies in environmental sustainability and health, the course will provide hands-on training in the management, coordination, and practice of interdisciplinary research. The goal is to enable doctoral students to work effectively on interdisciplinary research and prepare them for professional success in an increasingly interdisciplinary funding environment. This course will be in the format of a weekly seminar and laboratory and is open to all Johns Hopkins University doctoral students from any School. No prior knowledge of sustainability or public health is required.
Instructor(s): A. Monopolis; B. Hobbs.

EN.570.606. Statistical Computing. 1.0 Credit.
This course assumes a basic familiarity with programming in R. Some knowledge of probability and statistics will be a plus. The course introduces some key methods in implementing data-driven research. The course starts with a very brief review of programming in R and basics of probability and statistics and then spans into topics such as random variable generation, Monte Carlo integration, variance reduction techniques, uncertainty estimation, MCMC, probability density estimation and numerical methods. Recommend Course Background: EN.570.608 or equivalent.
Instructor(s): R. Nateghi.

EN.570.607. Energy Policy and Planning Models. 3.0 Credits.
Methods for optimizing operation and design of energy systems and for analyzing market impacts of energy and environmental policies are reviewed, emphasizing both theory and solution of actual models. Review of linear and nonlinear programming and complementarity methods for market simulation. Recommended Course Background: EN.570.493 and EN.570.495 or equivalent.
Instructor(s): B. Hobbs.

EN.570.610. Engineering Microbiology. 4.0 Credits.
Fundamental aspects of microbiology and biochemistry as related to environmental pollution and water quality control processes, biogeochemical cycles, microbiological ecology, energetics and kinetics of microbial growth, and biological fate of pollutants.
Instructor(s): E. Bouwer
Area: Engineering, Natural Sciences.

EN.570.614. Microbial Ecology. 3.0 Credits.
This course will highlight the latest methods in biotechnology revealing ecological principles determining the diversity and dynamics of microbial communities in a variety of ecosystems. We will explore advanced topics in ecology, such as niche theory, cooperation and speciation with examples from human health, engineering and environmental microbiology. Recommended Course Background: Ecology - EN.570.205 or Microbiology - AS.020.329
Instructor(s): S. Preheim
Area: Natural Sciences.

EN.570.615. Current Trends in Environmental Microbiology. 3.0 Credits.
This course will highlight recent discoveries and advances in environmental microbiology such as the identification of novel microbes, changing paradigms in nitrogen cycling, single-cell activity methods and novel methods in microbial community analysis. We will explore these topics by reading and discussing the current literature, supported by short lectures and in class activities related to the topics. Background in microbiology or microbial ecology is recommended. This course will meet with EN.570.415
Instructor(s): S. Preheim
Area: Engineering, Natural Sciences.
EN.570.616. Data Analytics in Environmental Health and Engineering. 3.0 Credits.
Data analytics is a field of study involving computational statistics, data mining and machine learning, to explore data sets, explain phenomena and build predictive models. The course begins with an overview of some traditional analysis approaches including ordinary least squares regression and related topics, notably diagnostic testing, detection of outliers and methods to impute missing data. More recent developments are presented, including ridge regression. Generalized linear models follow, emphasizing logistic regression and including models for polytomous data. Variable subsetting is addressed through stepwise procedures and the LASSO. Supervised machine learning topics include the basic concepts of boosting and bagging and several techniques: Decision Trees, Classification and Regression Trees, Random Forests, Conditional Random Forests, Adaptive Boosting, Support Vector Machines and Neural Networks. Unsupervised machine learning approaches are addressed through applications using k-means Clustering, Partitioning Around Medoids and Association Rule Mining. Methods for assessing model predictive performance are introduced including Confusion Matrices, k-fold Cross-Validation and Receiver Operating Characteristic Curves. Public health and environmental applications are emphasized, with modeling techniques and analysis tools implemented in R. EN.570.616 meets with EN.570.416. Undergraduate (usually Senior) students should sign up for 416 with permission of instructor only. 
Instructor(s): J. Williams
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.618. Multiobjective Programming and Planning. 3.0 Credits.
Public sector problems are typically characterized by a multiplicity of objectives and decision makers. This course presents a relatively new area of systems analysis which is useful for such problems: multiobjective programming or vector optimization theory. The fundamental concepts are developed and various methods are presented, including multiattribute value and utility theory. Graduate level of EN.570.418. Recommended Prerequisites: EN.570.495, EN.570.305, EN.553.361
Instructor(s): J. Williams
Area: Engineering.

EN.570.619. Methods in Microbial Community Analysis. 3.0 Credits.
This graduate level course will provide a practical knowledge of molecular methods used to identify microorganisms present with a sample and gain insight into their function and dynamics. It will provide theoretical background into how to identify microorganisms and infer functional capabilities from genetic material, practical knowledge of common molecular methods and computational skills needed to analyze the resulting sequence data. No background in molecular biology, computation or microbiology is necessary. Course objectives include (1) understanding key aspects of microbial community composition from literature reports; (2) recognizing major microbial taxonomic groups and understanding phylogenetic relationships; (3) developing molecular biology lab skills required to create gene amplicon libraries from an aquatic samples; (4) working knowledge of statistical methods used to associate taxonomic and functional gene information with specific environmental conditions. Recommended Course Background: Microeconomics, Introductory Statistics, Optimization. Co-listed with EN.570.429
Instructor(s): S. Preheim.

EN.570.631. Collaborative Modeling for Resolving Water Resources Disputes. 3.0 Credits.
Overview of collaborative modeling in water resources, Economic issues in water resources disputes, Legal issues in water resources disputes, Biological/Environmental issues in water resources disputes, Water management in the Delaware Basin, Understanding and using the Delaware River Basin Commission’s water management tool (an OASIS based model of the Delaware, Multi-objective water management, Understanding management trade-offs, Collaborative processes, Reality based negotiation skills, and Consensus building. Recommended Course Background: A strong interest in utilizing scientific tools to help resolve real-world disputes A background in general science – with at least two of the following disciplines: Biology, chemistry, physics, earth science, economics.
Instructor(s): D. Sheer
Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.635. Principles of Estuarine Environment: Chesapeake Bay. 3.0 Credits.
Topics include the physical, chemical, and biological components of the Chesapeake Bay ecosystem from the time it started to form some 10,000 to 12,000 years ago, when sea level began to rise as the continental glaciers receded; the geology, geomorphology, and biology of the watershed drained by the estuary; relationships between the watershed and the estuary through the millennia and the effect of climate, geomorphology, and humans on the ecology of the ecosystem and its economic productivity. 
Instructor(s): G. Brush
Area: Engineering, Natural Sciences.

EN.570.641. Environmental Inorganic Chemistry. 3.0 Credits.
Advanced undergraduate/graduate course that explores the chemical transformations of elements of the periodic table. Thermodynamic, kinetic, and mechanistic tools needed to address the multiple chemical species and interfaces that are present in natural waters and water-based technological processes are emphasized. Ligand exchange, metal ion exchange, adsorption/desorption, precipitation/dissolution, electron and group transfer reactions, and other concepts from coordination chemistry will be covered. Applications include elemental sources and sinks in ocean waters, reactive transport in porous media, weathering and soil genesis, nutrient and toxic element uptake by organisms, water treatment chemistry, and rational design of synthetic chemicals. Co-listed with EN.570.441
Instructor(s): A. Stone
Area: Natural Sciences.

EN.570.642. Environmental Organic Chemistry. 3.0 Credits.
Advanced undergraduate/graduate course focusing on examination of processes that affect the behavior and fate of anthropogenic organic contaminants in aquatic environments. Students learn to predict chemical properties influencing transfers between hydrophobic organic chemicals, air, water, sediments, and biota, based on a fundamental understanding of intermolecular interactions and thermodynamic principles. Recommended Course Background: AS.030.104 or permission required.
Instructor(s): A. Roberts
Area: Engineering, Natural Sciences.
EN.570.643. Aquatic and Biofluid Chemistry. 3.0 Credits.
Equilibrium speciation of natural waters, biofluids, and engineered systems. Topics include acids, bases, pH, and buffering; the precipitation and dissolution of solids; complexation and chelation; oxidation and reduction reactions; regulation and design. Intended for students from a variety of backgrounds. Recommended Course Background: One year of both Chemistry and Calculus. Meets with EN.570.443 (Aquatic and Biofluid Chemistry)
Instructor(s): A. Roberts
Area: Engineering, Natural Sciences.

EN.570.644. Physical and Chemical Processes. 3.0 Credits.
The application of basic physical and chemical concepts to the analysis of environmental engineering problems. Principles of chemical equilibrium and reaction, reaction engineering, interphase mass transfer, and adsorption are presented in the context of process design for unit operations in common use for water and wastewater treatment. Topics addressed include mass balances, hydraulic characteristics of reactors, reaction kinetics and reactor design, gas transfer processes (including both fundamentals of mass transfer and design analysis), and adsorption processes (including both fundamentals of adsorption and design analysis).
Instructor(s): W. Ball
Area: Engineering.

EN.570.645. Reaction Mechanisms in Environmental Organic Chemistry. 3.0 Credits.
Detailed investigation of mechanisms of abiotic and biochemical transformations of organic pollutants in natural and engineered environments. Recommended Course Background: EN.570.442.
Instructor(s): A. Roberts
Area: Engineering, Natural Sciences.

EN.570.646. Water Quality and Treatment: Global Issues and Solutions. 3.0 Credits.
This course involves extensive student participation and is intended for motivated graduate students from both engineering and non-engineering disciplines who are interested in understanding technological aspects of water quality in the contexts of drinking water treatment, wastewater disposal, and sanitation for public health. The course involves extensive outside reading, in-class reflections on those readings, and a combination of instructor- and student-led in-class presentations. After this course, students should have improved understanding of: (1) Fundamental concepts of water quality and treatment as related to the application of engineering principles to the design and operation of unit operations for the removal of traditional and "emerging" contaminants; (2) Challenges to providing water of appropriate quality for drinking, sanitation, and environmental sustainability in the face of population growth and climate change; and (3) Alternative approaches for meeting those challenges, particularly as related to the design and application of technological interventions.
Instructor(s): W. Ball.

EN.570.647. Hydrologic Transport in the Environment. 3.0 Credits.
This course considers the transport of solutes and sediments by water through terrestrial landscapes, with an emphasis on the movement of nutrients and contaminants from the landscape into receiving water bodies like rivers, lakes and estuaries. The course will cover the theoretical approaches (advection-diffusion/dispersion, transit time distributions), the use of active and passive tracers to infer transport processes, analysis of water quality time series, runoff generation and flow pathways in watersheds, and the effect of climate variability on transport. Assessment is based on a semester project and in-class presentations. Seniors interested in joining the class must have Hydrology 570.353 and should contact the instructor.
Instructor(s): C. Harman
Area: Engineering, Natural Sciences.

EN.570.648. Chemical Processes II. 3.0 Credits.
The occurrence, distribution, movement, and properties of the waters of the Earth. Topics include precipitation, infiltration, evaporation, transpiration, groundwater, and streamflow. Analyzes include the frequency of floods and droughts, time-series analyzes, flood routing, and hydrologic synthesis and simulation. Recommended Course Background: AS.110.302, EN.570.351
Instructor(s): C. Harman
Area: Engineering.

EN.570.652. Experimental Methods in Environmental Engineering and Chemistry. 4.0 Credits.
An advanced laboratory covering principles of modern analytical techniques and their applications to problems in environmental sciences. Topics include electrochemistry, spectrometry, gas and liquid chromatography. The course is directed to graduate students and advanced undergraduates in engineering and natural sciences. Co-listed with EN.570.452
Prerequisites: EN.570.443 OR EN.570.643 OR Permission of Instructor
Instructor(s): A. Stone
Area: Engineering, Natural Sciences
Writing Intensive.

EN.570.653. Hydrology. 3.0 Credits.
The occurrence, distribution, movement, and properties of the waters of the Earth. Topics include precipitation, infiltration, evaporation, transpiration, groundwater, and streamflow. Analyzes include the frequency of floods and droughts, time-series analyzes, flood routing, and hydrologic synthesis and simulation. Recommended Course Background: AS.110.302, EN.570.351
Instructor(s): C. Harman
Area: Engineering.
EN.570.654. Geostatistics: Understanding Spatial Data. 3.0 Credits. Spatial and geographic datasets are becoming increasingly common with improvements in data collection technologies. For example, satellites are able to collect more and more types of earth/environmental data, and web technologies (e.g., social media and e-commerce) provide vast new datasets on social, economic, and public health phenomena. However, many common statistical tools are ill-suited to spatial datasets; these datasets often exhibit complex spatial (and temporal) dependencies that require a special set of tools. In this course, students will learn how to quantitatively analyze, model, and predict spatial and spatiotemporal phenomena. Topics will include quantifying the spatial and temporal properties of data, interpolation and prediction, multivariate models, modeling uncertainty, measurement design, and strategies for very large datasets. We will draw examples from a wide variety of academic disciplines, including environmental engineering, earth science, public health, and political science. Pre-requisites: An introductory course in statistics is recommended. Knowledge of a scientific programming language (e.g., Matlab, R, or Python) will also be helpful. Instructor(s): S. Miller Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.657. Air Pollution. 3.0 Credits. The course consists of an introduction to the fundamental concepts of air pollution. Major topics of concern are aspects of atmospheric motion near the earth’s surface; basic thermodynamics of the atmosphere; atmospheric stability and turbulence; equations of mean motion in turbulent flow, mean flow in the surface boundary layer; mean flow, turbulence in the friction layer; diffusion in the atmosphere; statistical theory of turbulence; plume rise. Emphasis is placed upon the role and utility of such topics in a systems analysis context, e.g., development of large and mesoscale air pollution abatement strategies. Comparisons of the fundamental concepts common to both air and water pollution are discussed. Instructor(s): J. Ellis Area: Engineering, Quantitative and Mathematical Sciences.

EN.570.656. Stochastic Programming. 3.0 Credits. The course deals with computationally tractable methodologies for incorporating risk/uncertainty into mathematical programming (optimization) models. Focal topics include chance-constrained programming, stochastic linear programming, two-stage programming under uncertainty and stochastic dynamic programming. Some of these techniques may result in the creation of nonlinear models thus nonlinear/nonseparable optimization techniques are presented as well. Numerous applications are presented involving, for the most part, environmental (i.e., water and air resources) problems. Prerequisites: linear programming or equivalent, and introductory probability and statistics. Instructor(s): J. Ellis.

EN.570.659. Solid Waste Engineering and Management. 3.0 Credits. This course covers advanced engineering and scientific concepts and principles applied to the management of municipal solid waste (MSW) to protect human health and the environment and the conservation of limited resources through resource recovery and recycling of waste material. Instructor(s): H. Alavi Area: Engineering.

EN.570.691. Hazardous Waste Engineering and Management. 3.0 Credits. This course addresses traditional and innovative technologies, concepts, and principles applied to the management of hazardous waste and site remediation to protect human health and the environment. Instructor(s): H. Alavi Area: Engineering.

EN.570.693. Economic Foundations for Environmental Engineering and Policy Design. 3.0 Credits. This course includes an exposition of intermediate level price theory, combined with a survey of applications to the analysis of public sector decisions. Theoretical topics include demand, supply, the function and behavior of the market, and introductory welfare economics. Recommended Course Background: AS.180.101-AS.180.102, AS.110.202 or equivalent. This course runs concurrently with EN.570.493 (Undergrads may register by special request for EN.570.493 in order to take this course.) Instructor(s): J. Boland Area: Engineering, Quantitative and Mathematical Sciences, Social and Behavioral Sciences.
Cross Listed Courses

**Earth Planetary Sciences**

AS.270.205. Introduction to Geographic Information Systems and Geospatial Analysis. 3.0 Credits.
The course provides a broad introduction to the principles and practice of Geographic Information Systems (GIS) and related tools of Geospatial Analysis. Topics will include history of GIS, GIS data structures, data acquisition and merging, database management, spatial analysis, and GIS applications. In addition, students will get hands-on experience working with GIS software.
Instructor(s): X. Chen
Area: Engineering, Natural Sciences.

**Public Health Studies**

AS.280.335. The Environment and Your Health. 3.0 Credits.
This course surveys the basic concepts underlying environmental health sciences (toxicology, exposure assessment, risk assessment), current public health issues (hazardous waste, water- and food-borne diseases), and emerging global health threats (global warming, built environment, ozone depletion, sustainability). Public Health Studies, Global Environmental Change and Stability, and Earth and Planetary Science majors have 1st priority for enrollment. Your enrollment may be withdrawn at the discretion of the instructor if you are not a GECS, PHS, or EPS major.
Instructor(s): J. Bressler, J. Yager; M. Latshaw
Area: Natural Sciences.

**Interdepartmental**

AS.360.147. Freshmen Seminar: Adam Smith and Karl Marx. 3.0 Credits.
This course will compare the ideas of Adam Smith, the most famous proponent of free trade and free enterprise, with those of Karl Marx, the greatest critic of capitalism. For freshmen only.
Instructor(s): E. Schoenberger, P. Jelavich
Area: Humanities, Social and Behavioral Sciences
Writing Intensive.

AS.360.528. Problems in Applied Economics. 2.0 Credits.
This course focuses on a monetary approach to national income determination and the balance of payments. Money and banking, as well as commodity and financial markets, are dealt with under both central banking, as well as alternative monetary regimes. Particular emphasis is placed on currency board systems. Students learn how to properly conduct substantive economic research, utilizing primary data sources, statistical techniques and lessons from economic history. Findings are presented in the form of either memoranda or working papers of publishable quality. Exceptional work may be suitable for publication through the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Advanced excel programming skills are required and students are expected to be prepared for research at the Library of Congress in Washington, D.C.. Bloomberg certification is a requisite.
Prerequisites: EN.660.203
Instructor(s): S. Hanke
Writing Intensive.

General Engineering

EN.500.112. Gateway Computing. 3.0 Credits.
This course introduces fundamental programming concepts and techniques, and is intended for all who plan to develop computational artifacts or intelligently deploy computational tools in their studies and careers. Topics covered include the design and implementation of algorithms using variables, control structures, arrays, functions, files, testing, debugging, and structured program design. Elements of object-oriented programming, algorithmic efficiency and data visualization are also introduced. Students deploy programming to develop working solutions that address problems in engineering, science and other areas of contemporary interest that vary from section to section. Course homework involves significant programming. Attendance and participation in class sessions are expected.
Instructor(s): I. Sekyonda; J. Selinski; M. Darvish Darab
Area: Engineering, Natural Sciences.

**General Engineering**

The General Engineering program offers both a B.A. with a major in general engineering and a number of non-departmental courses.

**Bachelor of Arts in General Engineering**

The Bachelor of Arts in General Engineering is a liberal arts degree that is designed to provide students with both a focus in some area of humanities or social sciences and the fundamental engineering principles needed to understand modern technology, innovations, and engineering practices. It is intended for undergraduate students who desire a background in engineering and technology yet have neither the desire nor the intention to become professional engineers. These students may, for example, plan to pursue graduate or professional study in architecture, business, law (e.g., intellectual property, patent law), or medicine. They may wish to work in areas which relate to engineering and technology or to thrive in the global industrial economy. The Bachelor of Arts in General Engineering is a true liberal arts degree with an emphasis in engineering.

This degree is not an engineering degree, and is not suitable for employment as a professional engineer. This program is not accredited by ABET. Students desiring careers as professional engineers should complete a B.S. degree in one of the engineering disciplines offered by the Whiting School.

The distinctive features of the Bachelor of Arts in General Engineering include:

- **Breadth.** Course requirements for the Bachelor of Arts in General Engineering encourage breadth, including mathematics, natural sciences, humanities and/or social sciences, international studies (language or other courses and experience in a foreign country), and in engineering. The curriculum also allows for many free electives.
- **Flexibility.** This program is designed to allow students, in consultation with their advisor, the flexibility to choose a program of study that matches their interests. The engineering focus area and the humanities and social science requirements may be departmentally based or may follow a theme designed by the student and his/her advisor. Students are encouraged to minor in any area of their choosing.
- **Interdisciplinary Study.** The distribution requirements are ideal for students who seek to understand areas at the interface between technical fields (such as robotics, nanotechnology, and biomaterials) or the connections between a technical area and a discipline in the
humanities or social sciences (for example environment issues and international trade or ethics and biotechnology).

• International Dimensions of Engineering. Students are required to develop knowledge of the international dimensions of engineering. They may do this by studying abroad or by taking a combination of language and other classes that develop an understanding of the culture, technology, or society in a foreign country.

Requirements for the B.A. Degree
All undergraduate students majoring in the Bachelor of Arts in General Engineering must follow a program approved by their advisor. Candidates must fulfill the overall requirements for the bachelor’s degree described in this catalog. These include the university writing requirement, distribution requirement and 120 credit minimum. Sample curricula and details on concentrations can be found in the Advising Manual for general engineering (www.engineering.jhu.edu/academics).

Mathematics (20 credits)
Mathematics is at the core of modern science and technology and a solid foundation is required to understand how contemporary engineering problems are solved. Students are required to take five courses including:

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<th>Course</th>
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<tr>
<td>AS.110.108 Calculus I</td>
<td>4</td>
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<tr>
<td>or AS.110.106</td>
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<tr>
<td>AS.110.109 Calculus II</td>
<td>4</td>
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<tr>
<td>or AS.110.107</td>
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<tr>
<td>or AS.110.113</td>
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One course in statistics 4
One course at the 200-level or above in either statistics or mathematics 4
One mathematics or statistics elective 4
Total Credits 20

Natural Sciences (15 credits)
Students are required to take four courses and two laboratory courses including:

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<th>Course</th>
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<tr>
<td>AS.171.101 General Physics:</td>
<td>3-4</td>
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<tr>
<td>Physical Science Major I</td>
<td></td>
</tr>
<tr>
<td>or AS.171.103 General Physics I for Biological Science Majors</td>
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<tr>
<td>or AS.171.105 Classical Mechanics I</td>
<td></td>
</tr>
<tr>
<td>or AS.171.107 General Physics for Physical Sciences Majors (AL)</td>
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<tr>
<td>or EN.530.123 Introduction to Mechanics I</td>
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At least one course chosen from the following: 3

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<th>Course</th>
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<tr>
<td>AS.030.101 Introductory Chemistry I</td>
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<tr>
<td>AS.030.107 Chemical Principles w/lab: An Integrated Studio Course</td>
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</table>

Two terms of laboratory course (Integrated lab from AS.030.107 may count as 1 lab) 2

Two elective courses (area code N) 6
Total Credits 14-15

* EN.530.123, Introduction to Mechanics I, may be used to satisfy the Natural Sciences requirement if taken in conjunction with EN.530.124, Introduction to Mechanics II. EN.530.124 is a new course offering that will be taught in Spring 2018.

Humanities and Social Sciences (24 credits)

Writing Requirement. Students must complete at least four (minimum of 12 credits) writing intensive courses (catalog code W) and one of these courses must specifically develop writing skills, such as EN.661.110 Professional Writing and Communication or AS.060.113 Expository Writing.

Humanities or Social Science Focus. A minimum of four courses (12 credits) must be taken as a coherent group in either the humanities or social sciences, of which two are at the advanced (300+) level.

Humanities or Social Science Elective. Three additional courses (9 credits) in either the humanities or social sciences. These electives are typically used to take courses in economics and the history of science and technology, depending on the courses chosen to fulfill the concentration requirements detailed above.

International Dimensions of Engineering
Because of the importance of the globalization of technology, all students completing the B.A. in General Engineering are required to demonstrate competence in being able to address technical issues within the context of another society. This can be done in one of three different ways.

First, students are encouraged to study abroad for a minimum of one fall or one spring semester in any foreign country (except Canada). In that country, they must take the equivalent of a minimum of 12 credits which are transferred to their Hopkins transcript. In this case, these credits can satisfy any degree requirements (Humanities or Social Sciences, Engineering Concentration, Mathematics, Free Electives, etc.).

Second, students may complete the equivalent of two semesters of the same foreign language (students may not use language courses in their native language to satisfy this requirement) and one additional course which relates to the culture, economy, social structure, or politics of a country which uses this foreign language (9 credits).

Third, students may demonstrate proficiency in a foreign language by taking an intermediate course in a foreign language (this can include their native tongue) and two additional courses which relate to the culture, economy, social structure, or politics of a country which uses this foreign language (9 credits).

Engineering Core (15 credits)
One course (3 credits) that is an introduction to an engineering discipline. Examples include:

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>EN.500.101</td>
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<tr>
<td>EN.520.137</td>
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<tr>
<td>EN.530.111</td>
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<td>EN.560.141</td>
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<td>EN.570.108</td>
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<td>EN.500.112</td>
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One course (at least 3 credits) in a computer language. Examples include:

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<td>EN.500.112</td>
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</table>
Three courses in the fundamentals of engineering science (at least one course from three of the following four areas):

**Area 1: Circuits**
EN.520.230 Mastering Electronics 2

**Area 2: Statics**
EN.530.201 Statics and Mechanics of Materials 4
or EN.560.201 Statics & Mechanics of Materials

**Area 3: Materials Science**
EN.510.201 Introductory Materials Science for Engineers 3
or EN.510.311 Structure Of Materials

**Area 4: Thermodynamics**
EN.530.231 Mechanical Engineering Thermodynamics 3
or EN.540.203 Engineering Thermodynamics

**Engineering Focus Area (20 credits)**
The engineering focus area must consist of at least six courses (minimum of 20 credits) that are related thematically or departmentally; at least three (3) of which must be at the advanced level (300 or above). While examples of focus areas are provided in the Advising Manual, students are encouraged to develop their own focus areas in consultation with their faculty advisor.

**Free Electives**
Between five and nine full courses (at least 3 credits each) to ensure a minimum of 120 credits in total. The number of courses required will depend on how the International Dimensions requirement is satisfied and on the courses chosen in other areas. Students must select these courses in consultation with their advisor. These free electives are designed to allow students to develop a curriculum of study uniquely suited to their interests.

Students are required to have a minimum cumulative GPA of 2.0 to graduate. Further, a maximum of 12 “D” credits may be counted toward degree requirements. There is a maximum limit of six “D” credits in any combination of courses used to satisfy the Humanities or Social Sciences focus, the Engineering Core and the Engineering Focus Area (47 total credits).

For current course information and registration go to https://sis.jhu.edu/classes/

**Courses**

**EN.500.101. What Is Engineering?. 3.0 Credits.**
This is a course of lectures, laboratories, and special projects. Its objective is to introduce students not only to different fields of engineering but also to the analytic tools and techniques that the profession uses. Assignments include hands-on and virtual experiments, oral presentations of product design, and design/construction/testing of structures. Freshmen only or Permission Required.
Instructor(s): D. Ayhan
Area: Engineering.

**EN.500.103. Hopkins Engineering Sampler Seminar. 1.0 Credit.**
This course provides students with an overview of the undergraduate programs in the Whiting School of Engineering. Faculty from various departments will introduce students to their discipline including aspects of their personal research. Freshmen only.
Instructor(s): M. Falk
Area: Engineering.

**EN.500.111. Hopkins Engineering Applications & Research Tutorials. 1.0 Credit.**
Instructor(s): Staff
Area: Engineering.

Professor (Applied Mathematics and Statistics).
Erica Schoenberger
Professor (Environmental Health and Engineering).
Scott Smith
Professor (Computer Science)
Howard Weinert
Professor (Electrical and Computer Engineering).

**Senior Lecturer**
Lise Dahuron
Senior Lecturer (Chemical and Biomolecular Engineering)

**Lecturer**
Rachel Sangree
Lecturer (Civil Engineering).

For current faculty and contact information go to http://engineering.jhu.edu/academics/general-engineering/people/

**Faculty**

**Chair**
Michael Falk
Professor (Materials Science & Engineering, Mechanical Engineering, Physics) and Vice Dean for Undergraduate Education. Primary Advisor to the General Engineering Program and Chair of the General Engineering Faculty.

**Professors**
Andrew Douglas
Professor (Mechanical Engineering) and Vice Dean for Faculty, Whiting School of Engineering.

Kalina Hristova
Professor (Materials Science and Engineering).

Daniel Naiman
EN.500.112. Gateway Computing. 3.0 Credits.
This course introduces fundamental programming concepts and techniques, and is intended for all who plan to develop computational artifacts or intelligently deploy computational tools in their studies and careers. Topics covered include the design and implementation of algorithms using variables, control structures, arrays, functions, files, testing, debugging, and structured program design. Elements of object-oriented programming, algorithmic efficiency and data visualization are also introduced. Students deploy programming to develop working solutions that address problems in engineering, science and other areas of contemporary interest that vary from section to section. Course homework involves significant programming. Attendance and participation in class sessions are expected.
Instructor(s): I. Sekyonda; J. Selinski; M. Darvish Darab
Area: Engineering, Natural Sciences.

EN.500.125. Spatial Reasoning and Visualization for Engineers. 1.0 Credit.
This course will enhance students ability to imagine and mentally manipulate objects in three-dimensional space—a talent that is important in engineering. Through guided practice and fun hands-on activities, students will hone their spatial skills. This course is only for engineering freshmen. Registration is by invitation only, based on the results of the summer spatial reasoning diagnostic assessment. S/U only.
Instructor(s): A. Stephens
Area: Engineering.

EN.500.200. Computing for Engineers and Scientists. 4.0 Credits.
This course introduces a variety of techniques for solving problems in engineering and science on a computer using MATLAB. Topics include structure and operation of a computer, the programming language MATLAB, computational mathematics, and elementary numerical analysis. Co-listed with EN.550.200.
Prerequisites: Prereqs: AS.110.107 OR AS.110.109
Instructor(s): J. Yoder; K. Hedrick; T. Lebair
Area: Engineering, Quantitative and Mathematical Sciences.

EN.500.401. Research Laboratory Safety. 1.0 Credit.
An introduction to laboratory safety including chemical, biological, radiation, and physical hazards. Includes information on hazard assessment techniques, laboratory emergencies, and general lab standards for Whiting School of Engineering. The class will feature hands-on exercises with real-life experiments. Intended for students who have not yet begun working in a research laboratory.
Instructor(s): D. Kuespert.

EN.500.402. Interdisciplinary Engineering Design I. 4.0 Credits.
This is the first semester of a two-semester long course intended to engage students in the art of engineering design while working on interdisciplinary teams. Student teams must apply for and be accepted into this course prior to registering as a team. Teams must include students from more than one major. Students working in teams of three to six will select a small-scale, industry-suggested design problem in a designated area. A solution to the problem is devised and constructed by the team within limited time and cost boundaries. Oral reports related to the design work will be presented at regular intervals. A substantial prototype with preliminary test results is expected at the end of the first semester. A final device, product, system or method, with evidence of evaluation against project requirements, is expected at the end of the second semester.
Area: Engineering, Natural Sciences.

EN.500.403. Interdisciplinary Engineering Design II. 4.0 Credits.
This is the second semester of a two-semester long course intended to engage students in the art of engineering design while working on interdisciplinary teams. Student teams must apply for and be accepted into this course prior to registering as a team. Teams must include students from more than one major. Students working in teams of three to six will select a small-scale, industry-suggested design problem in a designated area. A solution to the problem is devised and constructed by the team within limited time and cost boundaries. Oral reports related to the design work will be presented at regular intervals. A substantial prototype with preliminary test results is expected at the end of the first semester. A final device, product, system or method, with evidence of evaluation against project requirements, is expected at the end of the second semester.
Area: Engineering, Natural Sciences.
EN.500.497. Practical Ethics for Future Leaders. 2.0 Credits.
This is a new interdisciplinary course on leadership, decision making, and the application of ethics to real world problems. JHU students are future leaders of innovation across many fields, including but not limited to engineering, business, law, journalism, government, science and medicine. The goal of this new course is to give students a deep and practical grounding in how leaders make decisions, and in particular difficult decisions where there is no clearly right answer. In the first part of the course, we will cover important concepts in the practical application of ethics; in decision making; and leadership. In the second part of the course, we will take a deep look at major ethical issues resulting from the newfound capabilities made possible by emerging technologies. This term, the main question will be, should humans eliminate disease-carrying mosquitoes using gene editing technology? In future terms, the question will be different. The awesome power of emerging technologies to modify our world - our food supply, our health, even people - will only increase and become more pressing in coming years. Questions include: Is modifying wild animals ethical, on its face? Who gets to decide this, and how do they decide? Animals interact with humans and cross borders - can one jurisdiction (county, state or country) make changes to wild populations that would impact others? Both EN.500.496 and EN.500.497 are primarily a combination of online lectures, readings and substantial discussion components during the first 2/3rds of the semester. EN.500.496.01 also incorporates several small group meetings in the final weeks of the semesters.
Prerequisites: If you have already taken EN.500.496, you cannot take EN.500.497.
Instructor(s): F. Macgabhann; I. Gannot
Area: Humanities, Social and Behavioral Sciences.

EN.500.501. SAB/JHU General Engineering Research (Abroad). 3.0 Credits.
General Engineering Research Project Abroad for undergraduate participating on summer projects with NUS, EPFL, SJTU, and DTU. Permission required.
Instructor(s): Staff.

Instructor(s): Staff.

EN.500.601. Research Laboratory Safety. 1.0 Credit.
This course provides practical exercises in laboratory safety, employing information on chemical, physical, radiation, and biological hazards. Exercises include topics such as ethics, inherently safer design, and application of safety knowledge and analysis to analyze real and/ or constructed experiments. The course is suitable for experienced researchers and for graduate students who have not yet begun working in a research laboratory in Homewood Schools. The course is given on six consecutive weeks in the latter half of the semester to allow time for students to study preliminary materials and take online exams on Blackboard. The preliminary material must be completed before the first class in order to progress in the course unless permission is obtained from the instructor. Offered Spring and Fall semesters.
Instructor(s): D. Kuespert.

EN.500.602. Seminar: Environmental and Applied Fluid Mechanics. 1.0 Credit.
Instructor(s): J. Katz.

EN.500.603. Academic Ethics.
Instructor(s): C. Kavanagh.

EN.500.745. Seminar in Computational Sensing and Robotics. 1.0 Credit.
Seminar series in robotics. Topics include: Medical robotics, including computer-integrated surgical systems and image-guided intervention. Sensor based robotics, including computer vision and biomedical image analysis. Algorithmic robotics, robot control and machine learning. Autonomous robotics for monitoring, exploration and manipulation with applications in home, environmental (land, sea, space), and defense areas. Biorobotics and neuromechanics, including devices, algorithms and approaches to robotics inspired by principles in biomechanics and neuroscience. Human-machine systems, including haptic and visual feedback, human perception, cognition and decision making, and human-machine collaborative systems. Cross-listed Mechanical Engineering, Computer Science, Electrical and Computer Engineering, and Biomedical Engineering.
Instructor(s): L. Whitcomb; P. Kazanzides.

EN.500.781. Preparation for University Teaching. 1.5 Credits.
This course will prepare graduate students to teach at the university level. Topics covered include large and small class teaching, characteristics of student learning, syllabus construction, grading students, and developing a teaching portfolio. Full-time EN Graduate Students only. Co-listed with AS.360.781.
Instructor(s): R. Shingles.

EN.500.851. Engineering Research Practicum. 1.0 - 9.0 Credits.
Instructor(s): Staff.

Cross Listed Courses

Civil Engineering
EN.560.141. Perspectives on the Evolution of Structures. 3.0 Credits.
Why do buildings and bridges look the way they do today? Students will be provided the tools to answer this question for themselves through a study of the history of the design of buildings and bridges throughout the world from both engineering and architectural/aesthetic perspectives. Only simple mathematics is required (no calculus). Students will participate in individual and group critique of structures from engineering, architectural, and social points of view.
Instructor(s): B. Schafer; R. Sangree
Area: Engineering, Quantitative and Mathematical Sciences
Writing Intensive.

Institute for NanoBio Technology
EN.670.495. Animation in Nanotechnology & Medicine. 3.0 Credits.
Instructor(s): M. Rietveld; P. Searson
Area: Engineering, Natural Sciences.

EN.670.616. Introduction to NanoBio Tutorials II. 1.0 Credit.
Ph.D. students and postdoctoral fellows in the HHMI/IGERT/PSOC/CCNE/CNTC training programs study and present topics in nanotechnology for biology and medicine.
Instructor(s): P. Searson.

EN.670.695. Animation in Nanotechnology & Medicine. 3.0 Credits.
Instructor(s): M. Rietveld; P. Searson
Area: Engineering, Natural Sciences.

Information Security Institute
http://isi.jhu.edu/

The Johns Hopkins University Information Security Institute (JHU-ISI) is the University's focal point for research and education in information security, assurance and privacy. Securing cyberspace and our national information infrastructure is more critical now than ever before, and it can be achieved only when the core technology, legal and policy issues
are adequately addressed. JHUISI is committed to a comprehensive approach that includes input from academia, industry and government. The University, through JHUISI's leadership, has thus been designated as a Center of Academic Excellence in Information Assurance Education and Research by the National Security Agency and the Department of Homeland Security, and leading experts in the field. Through our broad range of educational opportunities including a ground-breaking graduate program and leading edge research in foundational science and applied technologies, JHUISI is having a significant impact in the region and nationwide.

Our research in cryptography, networking, wireless, systems evaluation, medical privacy and electronic voting, among other areas is widely circulated among academics and policymakers. Moreover, JHUISI is instrumental in homeland security efforts across Hopkins, including emergency health preparedness, bio-terrorism and national defense.

The Johns Hopkins University Information Security Institute based in the Whiting School of Engineering provides a broad and holistic perspective to the information security and assurance field relative to both research and education. In addition to a comprehensive collection of programs related to information technology, a range of management, governance, and policy issues are integrated into the Information Security Institute agenda. The breadth of focus provided represents a strength and distinction of the Johns Hopkins University Information Security Institute. Through the involvement of the faculty and resources from the Whiting School of Engineering, the Krieger School of Arts and Sciences, the Bloomberg School of Public Health, the Carey Business School, and the Applied Physics Lab, a variety of innovative as well as international research and educational initiatives in information security and assurance are supported within the Information Security Institute.

Facilities
The computing facilities include a laboratory of shared servers and PC workstations, several customizable machines for student projects, and multiple high-speed laser printers. Various focused research laboratories have additional resources that provide greater specialization than the general lab. The facilities are connected to a secure high-speed network which allows access to specialized hardware in other departments and institutions. The Information Security Institute and Department of Computer Science cooperate in the use of some of these facilities.

M.S.S.I. Graduate Program
The flagship educational experience offered by Johns Hopkins University in the area of information security and assurance is represented by the Master of Science in Security Informatics (M.S.S.I.) degree. A wide range of courses is available in support of this unique and innovative graduate program.

The M.S.S.I. is a full-time day program offered on the Homewood Campus in North Baltimore. Most students complete the program in three full-time semesters though some graduate students may finish their degree part-time after completing the required two consecutive semesters of residency as a full-time student.

Application Requirements for the M.S.S.I. Degree
- Application to the M.S.S.I. degree is open to outstanding candidates who hold a bachelor's degree with sufficient technical exposure to computer science that serves as preparation for the core technology courses, including intermediate programming, data structure, discrete mathematics, and computer system fundamentals.
- All applicants are obligated to take and submit the results of the Aptitude Test of the Graduate Record Examination as one of the requirements for admission.
- International students are obligated to take either the TOEFL test or the IELTS test.

The preferred scores are as follows:

**GRE General Test**
- Verbal: 153 (62%)
- Quantitative: 160 (84%)
- Analytical: 3.5

**TOEFL Internet based**
- 100

**IELTS**
- 7.0

- The institution code for both the GRE and TOEFL is 5332.
- The department code for the GRE is 0404. The department code for TOEFL is 78.
- These scores in the above serve as general guidelines for admission. The Admissions Committee in making its final decisions will consider the combination of professional knowledge, academic excellence, letters of recommendation, and the statement of purpose, as well as GRE, TOEFL, and IELTS scores of the applicants.
- A student is required to apply online at [https://app.applyyourself.com/?id=jhu-grad](https://app.applyyourself.com/?id=jhu-grad).

Course Requirements for the M.S.S.I.
Upon admission to the Master of Science in Security Informatics, a student is assigned a graduate advisor from the Information Security Institute who must approve the courses to be applied to the M.S.S.I. degree.

The Master of Science in Security Informatics program has a course requirement of a minimum of 10 courses, plus a team-based capstone project including a report and presentation. Students must choose one of two tracks – Technology & Research Track or Policy & Management Track.

All courses supporting the M.S.S.I. are categorized as one of four areas of Technology, Policy, Health, and Management. Each course is further classified into Core, Elective or Foundational category.

The Technology & Research Track program of study must satisfy the following course distribution requirements:
- Five Technology courses: at least four Core Technology courses including at least one Core Technology course in Cryptography.
- Three Core Policy/Management/Health courses: at least one Core Policy course and one Core Management course.
- Two additional courses from Core or Elective Technology categories; or when deemed appropriate relative to a student's background, interests, and goals AND with the prior approval of the faculty advisor and the institute, from other course areas.

The Policy & Management Track program of study must satisfy the following course distribution requirements:
- Three Technology courses: at least two Core Technology courses including at least one Core Technology course in Cryptography.
- Five Core/Foundational Policy/Health/Management courses: at least one course from each of Core Policy/Management/Health categories and at least one Foundational Management course.
• Two additional courses from Core/Elective Technology or Core/Foundational Policy/Management/Health categories; or when deemed appropriate relative to a student’s background, interests, and goals AND with the prior approval of the faculty advisor and the institute, from other course areas.

**Project Requirement**
The M.S.S.I. Capstone Project will include both technology and non-technology components, and will be conducted within a team-structured environment comprised of students and faculty mentors (plus external mentors if appropriate). These projects will generally be sponsored by government/industry partners and affiliates of the Information Security Institute, and can also be related to faculty research programs supported by grants and contracts. They should relate to real-world problems and exhibit both theoretical and practical significance. The project must be documented by a report and presentation, as well as other applicable deliverables including but not limited to system prototypes, utility libraries, experimental demonstrations, conference or journal submissions, and so on. It should follow the best practice of software engineering.

Students should actively initiate the project while communicating with the potential faculty mentor for technical issues and the faculty advisor for project management. They are expected to develop a project plan at the end of the second semester. The project is expected to have a proposal approved at the start of the third semester and be finished by the end of the third semester. A presentation will be scheduled when the project concludes. The faculty mentor should approve each milestone of the project with the faculty advisor being informed. When the project is completed with all the deliverables, the faculty advisor assigns a score upon the recommendation of the faculty mentor.

**Additional Course Requirements**
• All courses toward the degree requirement must be 400-level or above. Other courses can be used with the approval of the Institute.
• Courses not found on the area-specific lists (http://engineering.jhu.edu/jhuisi/mssi-course-distribution) can be used to meet area requirements with prior approval from the student’s advisor and the Institute.
• At most two independent study courses can be counted toward the course requirements.
• No courses with grades of P may be counted with the exception of independent study courses.
• At most two courses may be transferred from other institutions. The student’s faculty advisor and the Director of Information Security Institute must approve such transfer courses.
• The overall grade point average of the courses counted towards the coursework requirements must be 3.00 or higher.
• At most two courses with grade less than B may be counted towards the course work requirements. No courses with grade less than C may be counted.
• A grade of D or F results in probation. A second D or F is cause for being dropped from the program.
• Completion of Academic Ethics (EN.500.603) and Responsible Conduct of Research training.

**JHUISI Courses**
<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN.601.641</td>
<td>Blockchains and Cryptocurrencies</td>
<td>3</td>
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<td>EN.601.642</td>
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<td>Introduction to Information Security</td>
<td>3</td>
</tr>
<tr>
<td>EN.650.614</td>
<td>Rights In Digital Age</td>
<td>3</td>
</tr>
<tr>
<td>EN.650.621</td>
<td>Critical Infrastructure Protection</td>
<td>3</td>
</tr>
<tr>
<td>EN.650.631</td>
<td>Ethical Hacking</td>
<td>3</td>
</tr>
<tr>
<td>EN.650.640</td>
<td>Moral &amp; Legal Foundations of Privacy</td>
<td>3</td>
</tr>
<tr>
<td>EN.650.653</td>
<td>Financial Issues in Managing a Secure Operation</td>
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<td>EN.650.654</td>
<td>Computer Intrusion Detection</td>
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<td>Implementing Effective Information Security Projects</td>
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<td>EN.650.656</td>
<td>Computer Forensics</td>
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<td>Introduction to Cryptography</td>
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<td>Software Vulnerability Analysis</td>
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<td>EN.650.663</td>
<td>Cloud Computing Security</td>
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</tr>
<tr>
<td>EN.650.671</td>
<td>Cryptography &amp; Coding</td>
<td>4</td>
</tr>
<tr>
<td>EN.650.672</td>
<td>Security Analytics</td>
<td>3</td>
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<tr>
<td>EN.650.681</td>
<td>Global Cybersecurity Trends and Practices</td>
<td>3</td>
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<tr>
<td>EN.650.724</td>
<td>Advanced Network Security</td>
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<tr>
<td>EN.650.757</td>
<td>Advanced Computer Forensics</td>
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<tr>
<td>EN.650.840</td>
<td>Information Security Independent Study</td>
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</tbody>
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All courses supporting the M.S.S.I. are categorized as one of four areas of Technology, Policy, Health, and Management. Each course is further classified into Core, Elective or Foundational category.

• For seven-week course modules, e.g., several courses offered through the Whiting School of Engineering Center for Leadership Education (CLE) (https://engineering.jhu.edu/cle), two of them count as one course of 3 credit hours.
• For quarter-based courses, e.g., several courses of course numbers starting with ME from the School of Medicine Division of Health Sciences Informatics (http://dhsi.med.jhmi.edu), two of them are equivalent of one WSE course of 3 credit hours.

**Core Technology Courses**
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<td>EN.650.672</td>
<td>Security Analytics</td>
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</tr>
</tbody>
</table>
EN.650.724 Advanced Network Security 3
EN.650.757 Advanced Computer Forensics 3

Elective Technology Courses
EN.601.631 Theory of Computation 3
EN.601.633 Intro Algorithms 3
EN.601.641 Blockchains and Cryptocurrencies 3
EN.650.621 Critical Infrastructure Protection 3
EN.650.840 Information Security Independent Study 3

Core Policy Courses
EN.650.614 Rights In Digital Age 3
EN.650.640 Moral & Legal Foundations of Privacy 3
EN.650.681 Global Cybersecurity Trends and Practices 3
EN.660.311 Law and the Internet 3

Core Health Courses
School of Medicine courses ME.600.900, ME.600.901, ME.600.903, and ME.600.906 may be taken to fulfill core health course requirements.

Core Management Courses
EN.650.653 Financial Issues in Managing a Secure Operation 3
EN.650.655 Implementing Effective Information Security Projects 3

Foundational Management Courses
EN.663.644 Writing Articles and Technical Reports 1.5
EN.663.645 Improving Presentation Skills for Scientists and Engineers 1.5
EN.663.660 Managing People and Resolving Conflicts 1.5
EN.663.670 Project Management 1.5
EN.663.671 Leading Change 1.5
EN.663.673 Leading Teams in Virtual, International and Local Settings 1.5
EN.663.674 Fundamentals of Management 1.5

Elective Policy/Health/Management Courses
The following are sample courses offered by the Bloomberg School of Public Health, the Carey Business School, and the Krieger School of Arts and Sciences.*
PH.300.651 Introduction to U.S. Healthcare System Policy
AS.406.665 Art and Practice of Intelligence

* For other elective options that fulfill this requirement refer to http://isi.jhu.edu/mssi/course_distribution

Combined Bachelor’s/Master’s Degree Program in Conjunction with the M.S.S.I.
A combined bachelor’s/master’s degree program including the M.S.S.I. is also available to Johns Hopkins University students. In this program, by the conclusion of the undergraduate sophomore/junior academic year, a student can apply for combined admission into the M.S.S.I. program. If accepted, the student during each subsequent semester partitions her/his course load into courses that will count for the undergraduate degree and courses that will count for the M.S.S.I. degree. Usually with one additional year of study, the student can simultaneously satisfy both sets of degree requirements. For more information on the combined bachelor’s/master’s status, please visit https://engineering.jhu.edu/academics/combined-bachelors-masters/.

Dual Master’s Program with the Department of Computer Science
Students interested in pursuing the above Dual Master’s Program (DMP) will have initially entered either the M.S.S.I. program or the M.S.E. program in Computer Science, and then apply for the DMP at a later point. A maximum of two courses (approved by the advisors) can be double counted toward each set of course requirements, thereby facilitating the feasibility of completing the DMP in two academic years plus the in-between summer. In such cases, the designation of the double counted courses would be done in conjunction with one advisor from each department and the Academic Program Administrator.

Dual Master’s Program with the Department of Applied Math and Statistics in the WSE
A similar DMP has been initiated regarding the JHUISI M.S.S.I. and the master’s program in the Department of Applied Math and Statistics in the WSE. The details of this DMP are similar in principle to those for the M.S.S.I./M.S.E. in Computer Science, but there are some significant requirement/curricular differences. Each program should be contacted if a student is interested, and students will need to comply with any application processes for consideration.

Dual Master’s Program with the School of Public Health
A similar DMP has been initiated regarding the JHUISI M.S.S.I. and the Master of Health Sciences (M.H.S.) program in the Bloomberg School of Public Health (BSPH). The details of this M.S.S.I./M.H.S. DMP are similar in principle to those for the M.S.S.I./M.S.E. in Computer Science, but there are some significant differences. Each program should be contacted if a student is interested.

For current faculty and contact information go to http://isi.jhu.edu/institute/people

Faculty
Executive Director
Anton Dahbura
Information Security Institute

Program Director
Xiangyang Li
Master of Science in Security Informatics

Professor
Aviel Rubin
Computer Science: Technical Director of Information Security Institute: network and systems security, applied cryptography, cryptographic key distribution, anonymity and computer privacy, electronic commerce, fire-walls and network perimeter defenses, security issues in e-voting, applying security to applications such as medical information systems, intellectual property protection.

Associate Research Professor
Susan Hohenberger
Computer Science: theory, cryptography, computer security, algorithms, complexity theory, balancing privacy and accountability in information systems.

Assistant Professors
Matthew Green
Computer Science: applied cryptography, cryptographic protocol design, analysis of practical security systems, privacy-preserving storage and identification technologies.

Abhishek Jain
Computer Science: cryptography & security, theoretical computer science.

**Lecturers**

Joel Coffman, Ph.D.
Senior Cyber Engineer, Applied Physics Laboratory: cloud computing, databases, software engineering, computer architecture.

Vincent Galluzzo, J.D.
Intellectual Property Protection, Privacy.

Michael Jacobs, J.D.
Computer ethics, digital rights management, intellectual property protection.

Reuben A. Johnston
Senior Cyber Security Research Engineer, Applied Physics Laboratory: Systems engineering, operations research, software security and reverse engineering.

Michael Kociemba
Information security, management, and infrastructure protection.

Timothy R. Leschke, Ph.D.
Computer forensics, Information Visualization.

Song Luo, Ph.D
Computer security and security analytics.

Seth Nielson, Ph.D.
Network security.

Williams Sauers, J.D.
Digital rights management, intellectual property protection.

Terry L. Thompson, PhD
Global cyber trends, cyber policy and governance.

Lanier Watkins, Ph.D.

For current course information and registration go to https://sis.jhu.edu/classes/

**Courses**

**EN.650.401. Introduction to Information Security. 3.0 Credits.**
This course exposes students to the cross-disciplinary and broad information security field. It surveys a range of fundamental topics of information security principles, architecture, policy and standard, risk management, cryptography, physical, operation, system and network security mechanisms, and law and ethics, among others. This course includes lectures, case studies, and homework. Students will also complete independent study class projects. Recommended Course Background: Basic knowledge of computer system and information technology.
Instructor(s): X. Li.

**EN.650.457. Computer Forensics. 3.0 Credits.**
This course introduces students to the field of computer forensics and it will focus on the various contemporary policy issues and applied technologies. Topics to be covered include: legal and regulatory issues, investigation techniques, data analysis approaches, and incident response procedures for Windows and UNIX systems. Homework in this course will relate to laboratory assignments and research exercises. Students should also expect that a group project will be integrated into this course.
Instructor(s): T. Leschke
Area: Engineering.

**EN.650.458. Introduction to Cryptography. 3.0 Credits.**
Cryptography has a rich history as one of the foundations of information security. This course serves as the introduction to the working primitives, development and various techniques in this field. It emphasizes reasoning about the constraint and construction of cryptographic protocols that use shared secret key or public key. Students will also be exposed to some current open problems. Permission of instructor only.
Instructor(s): X. Li
Area: Engineering.

**EN.650.471. Cryptography & Coding. 4.0 Credits.**
A first course in the mathematical theory of secure and reliable electronic communication. Cryptology is the study of secure communication. How can we ensure the privacy of messages? Coding theory studies how to make communication reliable. How can messages be sent over noisy lines? Topics include finite field arithmetic, error-detecting and error-correcting codes, data compressions, ciphers, one-time pads, the Enigma machine, one-way functions, discrete logarithm, primality testing, secret key exchange, public key cryptosystems, digital signatures, and key escrow. Students should have computing experience. Recommended Course Background: AS.110.201
Prerequisites: EN.550.171 or permission
Instructor(s): D. Fishkind
Area: Engineering, Quantitative and Mathematical Sciences.

**EN.650.601. Introduction to Information Security. 3.0 Credits.**
This course exposes students to the cross-disciplinary and broad information security field. It surveys a range of fundamental topics of information security principles, architecture, policy and standard, risk management, cryptography, physical, operation, system and network security mechanisms, and law and ethics, among others. This course includes lectures, case studies, and homework. Students will also complete independent study class projects. Recommended Course Background: Basic knowledge of computer system and information technology.
Instructor(s): X. Li.
EN.650.614. Rights In Digital Age. 3.0 Credits.
This course will examine various legal and policy issues presented by the tremendous growth in computer technology, especially the internet. The rights that various parties have with respect to creating, modifying, using, distributing, storing, and copying digital data will be explored. The concurrent responsibilities, and potential liabilities, of those parties will also be addressed. The course will focus on intellectual property issues, especially copyright law, and other legal and economic considerations related to the use and management of digital data. Copyright law and its role within the framework of intellectual property law will be presented in a historical context with an emphasis on its applicability to emerging-technology issues. Specifically, the treatment of various works, such as music, film, and photography that were traditionally, analog in nature will be analyzed with respect to their treatment in the digital domain; works that are by their nature digital, such as computer software, will also be analyzed. The current state of U.S. copyright law will be presented, as will relevant international treaties and foreign laws. The goal of the course is to provide those involved or interested in digital rights management with a general awareness of the rights and obligations associated with maintaining and distributing digital data. (This course will be taught in Washington, DC and video-cast on Homewood Campus.)
Instructor(s): M. Jacobs
Area: Social and Behavioral Sciences.

EN.650.621. Critical Infrastructure Protection. 3.0 Credits.
This course focuses on understanding the history, the vulnerability, and the need to protect our Critical Infrastructure and Key Resources (CIKR). We will start by briefly surveying the policies which define the issues surrounding CIKR and the strategies that have been identified to protect them. Most importantly, we will take a comprehensive approach to evaluating the technical vulnerabilities of the 18 identified sectors, and we will discuss the tactics that are necessary to mitigate the risks associated with each sector. These vulnerabilities will be discussed from the perspective of ACM, IEEE or other technical journals/articles which detail recent and relevant network-level CIKR exploits. We will cover well known vulnerable systems such the Internet, SCADA or PLC and lesser known systems such as E911 and industrial robot. Also, a class project is required. Recommended Course Background: EN.650.424 or equivalent or permission by instructor.
Instructor(s): L. Watkins
Area: Engineering, Natural Sciences.

EN.650.624. Advanced Network Security. 3.0 Credits.
This course focuses on advanced security topics and research in computer networks. It builds on the basic overview of network security covered in previous security courses. Beyond the basics of developing security network communications and applications, this advanced course dives deeper into the theory and practice behind network attack, the growing reality of weaponized zero-day vulnerabilities, and the current state-of-the-art responses. Course work includes reviewing contemporary security research papers, hands-on experiments in defending/attacking networks, and writing analyses.
Prerequisites: EN.650.424 OR EN.600.424 or permission of the instructor.
Instructor(s): S. Nielson
Area: Engineering.

EN.650.631. Ethical Hacking. 3.0 Credits.
Cyber security affects every facet of industry and our government, and thus is now a threat to National Security. This course is designed to introduce students to the skills needed to defend computer network infrastructure by exposing them to the hands-on identification and exploitation of vulnerabilities in servers (i.e., Windows and Linux), wireless networks, websites, and cryptologic systems. These skills will be tested by having teams of students develop and participate in instructor lead capture-the-flag competitions. Also included are advanced topics such as shell coding, IDA Pro analysis, fuzzing, and writing or exploiting network-based applications or techniques such as web servers, spoofing, and denial of service.
Instructor(s): L. Watkins
Area: Engineering.

EN.650.640. Moral & Legal Foundations of Privacy. 3.0 Credits.
This course explores the ethical and legal underpinnings of the concept of privacy. It examines the nature and scope of the right to privacy by addressing fundamental questions such as: What is privacy? Why is privacy morally important? How is the right to privacy been articulated in constitutional law?
Instructor(s): V. Galluzzo; W. Sauers.

EN.650.653. Financial Issues in Managing a Secure Operation. 3.0 Credits.
This course addresses the risks (financial, reputation, business, and third party), costs, ROI, and other business issues concerned in planning and managing a secure operation. Topics include disaster recovery, outsourcing issues; service level agreements; evaluating external security service providers; assessing security total cost of ownership; audit procedures; financial integrity; cost/benefit analyses; back-up and recovery provisions; insurance protection; contingency and business continuity plans; qualitative and quantitative risk analysis; monitoring the security of the enterprise; information economics; performance reporting; automated metrics reporting; responses to threats; effects of security policies and practices on business and customers; preparing a business case for information security investments; and developing cost-effective solutions given constraints in money, assets, and personnel. Case studies and exercises will be used to illustrate financial planning and evaluation of security operations.
Instructor(s): M. Kociemba.

EN.650.654. Computer Intrusion Detection. 3.0 Credits.
Intrusion detection supports the on-line monitoring of computer system activities and the detection of attempts to compromise normal services. This course starts with an overview of intrusion detection tasks and activities. Detailed discussion introduces a traditional classification of intrusion detection models, applications in host-centered and distributed environments, and various intrusion detection techniques ranging from statistical analysis to biological computing. This course serves as a comprehensive introduction of recent research efforts in intrusion detection and the challenges facing modern intrusion detection systems. Students will also be able to pursue in-depth study of special topics of interest in course projects.
Instructor(s): X. Li
Area: Engineering, Natural Sciences.
EN.650.655. Implementing Effective Information Security Projects. 3.0 Credits.
This course focuses on the personnel, legal, regulatory and privacy issues that comprise the basic security management areas that must be considered when developing and implementing an effective information security program. Specific topics include security-related legislation, government and industry security frameworks, the identification and management of risk, security controls, defense in depth, critical infrastructure protection, development and implementation of an enterprise wide security strategy, and organizational roles and responsibilities.
Instructor(s): M. Kociamba.

EN.650.656. Computer Forensics. 3.0 Credits.
This course introduces students to the field of computer forensics and it will focus on the various contemporary policy issues and applied technologies. Topics to be covered include: legal and regulatory issues, investigation techniques, data analysis approaches, and incident response procedures for Windows and UNIX systems. Homework in this course will relate to laboratory assignments and research exercises. Students should also expect that a group project will be integrated into this course.
Instructor(s): T. Leschke
Area: Engineering.

EN.650.658. Introduction to Cryptography. 3.0 Credits.
Cryptography has a rich history as one of the foundations of information security. This course serves as the introduction to the working primitives, development and various techniques in this field. It emphasizes reasoning about the constraint and construction of cryptographic protocols that use shared secret key or public key. Students will also be exposed to some current open problems. Permission of instructor only.
Instructor(s): X. Li
Area: Engineering.

EN.650.660. Software Vulnerability Analysis. 3.0 Credits.
Competent execution of security assessments on modern software systems requires extensive knowledge in numerous technical domains and comprehensive understanding of security risks. This course provides necessary background knowledge and examines relevant theories for software vulnerabilities and exploits in detail. Key topics include historical vulnerabilities, their corresponding exploits, and associated risk mitigations. Fundamental tools and techniques for performing security assessments (e.g., software reverse engineering, static analysis, and dynamic analysis) are covered extensively. The format of this course includes lectures and assignments where students learn how to develop exploits to well-known historical vulnerabilities in a controlled environment. Students will complete and demonstrate a project as part of the course.
Instructor(s): R. Johnston
Area: Engineering.

EN.650.661. Human Factors in Information Security. 3.0 Credits.
The human factor is critical to any successful computer security solution since users are very often the weakest link in such systems. This course will examine a variety of human behaviors ranging from micro to macro cybernetic levels that are relevant to making the best case for information security. It is delivered through lectures on relevant findings in different disciplines of human computer interaction, human factors engineering, cognitive science, and product design; studies of useful user and security modeling frameworks and tools; and term research projects to explore security oriented topics in human machine systems. Its goal is to improve security informatics through informed decisions by the knowledge of the good and bad human characters in computer and cyber security.
Instructor(s): X. Li
Area: Engineering.

EN.650.663. Cloud Computing Security. 3.0 Credits.
Cloud computing promises significant cost savings via economies of scale that typically are not achievable by a single organization. This course examines cloud computing in detail and introduces the security concerns associated with cloud computing. Key topics include service models for cloud computing, virtualization, storage, management, and data processing. Fundamental security principles are introduced and applied to cloud computing environments. The format of this course includes lectures and hands-on assignments. Students will complete a project and present it as part of the course.
Instructor(s): J. Coffman
Area: Engineering, Natural Sciences.

EN.650.671. Cryptography & Coding. 4.0 Credits.
A first course in the mathematical theory of secure and reliable electronic communication. Cryptology is the study of secure communication: How can we ensure the privacy of messages? Coding theory studies how to make communication reliable: How can messages be sent over noisy lines? Topics include finite field arithmetic, error-detecting and error-correcting codes, data compressions, ciphers, one-time pads, the Enigma machine, one-way functions, discrete logarithm, primality testing, secret key exchange, public key cryptosystems, digital signatures, and key escrow. Students should have computing experience. Recommended Course Background: AS.110.201
Prerequisites: EN.550.171 or permission of the instructor.
Instructor(s): D. Fishkind
Area: Engineering, Quantitative and Mathematical Sciences.

EN.650.672. Security Analytics. 3.0 Credits.
Security analytics refers to information technology solutions that gather and analyze security events to bring situational awareness and enable IT staff to understand and analyze events that pose the greatest risk. Increasingly, detecting and preventing cyber attacks require sophisticated use of data analytics and machine learning tools. This course will cover fundamental theories and methods in data science, modern security analytical tools, and practical use cases of security analytics. Students of this course learn concepts, tasks, and methods of data science; and how to apply data science to cyber security problems. Students also learn how to use modern software in security analytics. Recommend Course Background: Basic knowledge of statistics; Either python or R programming skill (do not require both).
Instructor(s): S. Luo.
EN.650.681. Global Cybersecurity Trends and Practices. 3.0 Credits.
This course provides an overview of cybersecurity capabilities and practices in the global community. International organizations engaged in cybersecurity policy and governance and the national strategies of many countries are examined in detail. Students will gain insights into the political, economic, military, and technological components of cybersecurity as practiced in the U.S., UK, China, Russia, and other countries. The course is designed around four general themes: global cyber threats, strategies and policies in response to cyber threats, comparative cybersecurity capabilities of nation-states; and cybersecurity in international politics. Students will also gain an appreciation of key cybersecurity issues like critical infrastructure protection and information sharing in the international context. The course will provide students a broad perspective on the global context of cybersecurity, complementing knowledge gained in other courses in the graduate program. There will be assignments to study key literature and current events, as well as quizzes and a mid-term exam. Students will also conduct research projects that focus on the interaction of technology, policy, strategy, and governance, and present results to the class. EN.650.401/EN.650.601 recommended
Instructor(s): T. Thompson
Area: Engineering.

EN.650.724. Advanced Network Security. 3.0 Credits.
This course focuses on advanced security topics and research in computer networks. It builds on the basic overview of network security covered in previous security courses. Beyond the basics of developing security network communications and applications, this advanced course dives deeper into the theory and practice behind network attack, the growing reality of weaponized zero-day vulnerabilities, and the current state-of-the-art responses. Course work includes reviewing contemporary security research papers, hands-on experiments in defending/attacking networks, and writing analyses.
Prerequisites: EN.601.644 or permission of the instructor.
Instructor(s): S. Nielson
Area: Engineering.

EN.650.739. Special Network Security Projects. 1.0 - 4.0 Credits.
Instructor(s): Staff.

EN.650.757. Advanced Computer Forensics. 3.0 Credits.
This course will analyze advanced topics and state of the art issues in the field of digital forensics. The course will be run in a research seminar format and students will be given both basic and applied research projects in such areas as: intrusion analysis, network forensics, memory forensics, mobile devices, and other emerging issues.
Instructor(s): T. Leschke.

EN.650.836. Information Security Projects. 1.0 Credit.
All MSSI programs must include a project involving a research and development oriented investigation focused on an approved topic addressing the field of information security and assurance from the perspective of relevant applications and/or theory. There must be project supervision and approval involving a JHUISI affiliated faculty member. A project can be conducted individually or within a team-structured environment comprised of MSSI students and an advisor. A successful project must result in an associated report suitable for on-line distribution. When appropriate, a project can also lead to the development of a so-called "deliverable" such as software or a prototype system. Projects can be sponsored by government/industry partners and affiliates of the Information Security Institute, and can also be related to faculty research programs supported by grants and Contracts. Required course for any full-time MSSI student. Open to MSSI students. Permission required for non-MSSI students.
Instructor(s): A. Dahbura; X. Li.

EN.650.837. Information Security Projects. 1.0 Credit.
Open to MSSI students. Permission Required for non-MSSI students.
All MSSI programs must include a project involving a research and development oriented investigation focused on an approved topic addressing the field of information security and assurance from the perspective of relevant applications and/or theory. There must be project supervision and approval involving a JHUISI affiliated faculty member. A project can be conducted individually or within a team-structured environment comprised of MSSI students and an advisor. A successful project must result in an associated report suitable for on-line distribution. When appropriate, a project can also lead to the development of a so-called "deliverable" such as software or a prototype system. Projects can be sponsored by government/industry partners and affiliates of the Information Security Institute, and can also be related to faculty research programs supported by grants and Contracts. Required for MSSI students on full-time status.
Instructor(s): A. Dahbura; X. Li.

EN.650.840. Information Security Independent Study. 3.0 Credits.
Individual study in an area of mutual interest to a graduate student and a faculty member in the Institute.
Instructor(s): X. Li.

EN.650.890. Information Security Research. 1.0 - 4.0 Credits.
Instructor(s): G. Masson.

Cross Listed Courses

Computer Science
EN.601.631. Theory of Computation. 3.0 Credits.
This is a graduate-level course studying the theoretical foundations of computer science. Topics covered will be models of computation from automata to Turing machines, computability, complexity theory, randomized algorithms, inapproximability, interactive proof systems and probabilistically checkable proofs. Students may not take both EN.601.231 and EN.601.631, unless one is for an undergrad degree and the other for grad. [Analysis]Recommended Course Background: EN.553.171 or instructor permission.
Instructor(s): X. Li
Area: Engineering, Quantitative and Mathematical Sciences.
EN.601.443. Operating Systems and Networking. 3.0 Credits.
Same material as EN.601.443, for graduate students. This course concentrates on the design of algorithms and the rigorous analysis of their efficiency. Topics include the basic definitions of algorithmic complexity (worst case, average case); basic tools such as dynamic programming, sorting, searching, and selection; advanced data structures and their applications (such as union-find); graph algorithms and searching techniques such as minimum spanning trees, depth-first search, shortest paths, design of online algorithms and competitive analysis. [Analysis]
Prerequisites: Students may receive credit for only one of EN.600.443, EN.601.463, EN.601.433, EN.601.633.
Instructor(s): M. Dinitz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.444. Network Security. 3.0 Credits.
Same material as 601.444, for graduate students. This course focuses on communication security in computer systems and networks. The course is intended to provide students with an introduction to the field of network security. The course covers network security services such as authentication and access control, integrity and confidentiality of data, firewalls and related technologies, Web security and privacy. Course work involves implementing various security techniques. A course project is required. [Systems] Recommended. Course Background: EN.601.220, EN.601.226 or equivalent
Prerequisites: Students may receive credit for only one of EN.600.424, EN.650.424, EN.601.444, EN.601.644.
Instructor(s): S. Nielson
Area: Engineering.

EN.601.445. Modern Cryptography. 3.0 Credits.
Same material as 601.445, for graduate students. This semester-long course will teach systems and cryptographic design principles by example: by studying and identifying flaws in widely-deployed cryptographic products and protocols. Our focus will be on the techniques used in practical security systems, the mistakes that lead to failure, and the approaches that might have avoided the problem. We will place a particular emphasis on the techniques of provable security and the feasibility of reverse-engineering undocumented cryptographic systems. [Systems]
Prerequisites: Students may receive credit for only one of EN.600.454, EN.650.454, EN.601.445, EN.601.645.
Instructor(s): M. Green
Area: Engineering.

EN.601.633. Intro Algorithms. 3.0 Credits.
Same material as 601.433, for graduate students. This course concentrates on the design of algorithms and the rigorous analysis of their efficiency. Topics include the basic definitions of algorithmic complexity (worst case, average case); basic tools such as dynamic programming, sorting, searching, and selection; advanced data structures and their applications (such as union-find); graph algorithms and searching techniques such as minimum spanning trees, depth-first search, shortest paths, design of online algorithms and competitive analysis. [Analysis]
Prerequisites: Students may receive credit for only one of EN.600.363, EN.600.463, EN.601.433, EN.601.633.
Instructor(s): M. Dinitz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.642. Modern Cryptography. 3.0 Credits.
Same material as 601.442, for graduate students. Modern Cryptography includes seemingly paradoxical notions such as communicating privately without a shared secret, proving things without leaking knowledge, and computing on encrypted data. In this challenging but rewarding course we will start from the basics of private and public key cryptography and go all the way up to advanced notions such as zero-knowledge proofs, functional encryption and program obfuscation. The class will focus on rigorous proofs and require mathematical maturity. [Analysis] Required course background: EN.601.231 or EN.601.631.
Prerequisites: Students may receive credit for only one of EN.600.442, EN.601.442, EN.601.642.
Instructor(s): A. Jain
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.644. Network Security. 3.0 Credits.
Same material as 601.444, for graduate students. This course focuses on communication security in computer systems and networks. The course is intended to provide students with an introduction to the field of network security. The course covers network security services such as authentication and access control, integrity and confidentiality of data, firewalls and related technologies, Web security and privacy. Course work involves implementing various security techniques. A course project is required. [Systems] Recommended. Course Background: EN.601.220, EN.601.226 or equivalent
Prerequisites: Students may receive credit for only one of EN.600.424, EN.650.424, EN.601.444, EN.601.644.
Instructor(s): S. Nielson
Area: Engineering.

EN.601.645. Practical Cryptographic Systems. 3.0 Credits.
Same material as 601.445, for graduate students. This semester-long course will teach systems and cryptographic design principles by example: by studying and identifying flaws in widely-deployed cryptographic products and protocols. Our focus will be on the techniques used in practical security systems, the mistakes that lead to failure, and the approaches that might have avoided the problem. We will place a particular emphasis on the techniques of provable security and the feasibility of reverse-engineering undocumented cryptographic systems. [Systems]
Prerequisites: Students may receive credit for only one of EN.600.454, EN.650.454, EN.601.445, EN.601.645.
Instructor(s): M. Green
Area: Engineering.

EN.601.743. Advanced Topics in Computer Security. 3.0 Credits.
Topics will vary from year to year, but will focus mainly on network perimeter protection, host-level protection, authentication technologies, intellectual property protection, formal analysis techniques, intrusion detection and similarly advanced subjects. Emphasis in this course is on understanding how security issues impact real systems, while maintaining an appreciation for grounding the work in fundamental science. Students will study and present various advanced research papers to the class. There will be homework assignments and a course project.
Instructor(s): A. Rubin.

EN.601.745. Advanced Topics in Applied Cryptography. 3.0 Credits.
This reading and project based course will explore the latest research in the area of applied cryptography and cryptographic engineering. Topics covered will include zero knowledge, efficient multiparty computation, cryptocurrencies, and trusted computing hardware. Readings will be drawn from the latest applied cryptography and security conferences. The course will include both reading, critical analysis, presentations and a course programming project. [Analysis or Applications] Required course background: EN.600.363.
Prerequisites: EN.600.454 OR EN.601.445 OR EN.601.645 OR EN.600.442 OR EN.601.442 OR EN.601.642
Instructor(s): M. Green.

Materials Science and Engineering

http://materials.jhu.edu/

Materials are essential to the construction of any engineering structure, from the smallest integrated circuit to the largest bridge. In almost every technology, the performance, reliability, or cost is determined by the materials used. As a result, the drive to develop new materials and processes (or to improve existing ones) makes materials science
and engineering one of the most important and dynamic engineering disciplines.

The central theme of materials science and engineering is that the relationships among the structures, properties, processing, and performance of materials are crucial to their function in engineering structures. Materials scientists seek to understand these fundamental relationships and use this understanding to synthesize new materials or develop new processes for producing existing ones. Materials engineers design or select materials for particular applications and develop improved processing techniques. Since materials scientists and engineers must understand the properties of materials as well as their applications, the field is inherently interdisciplinary and draws on aspects of almost every other engineering discipline as well as physics, chemistry, and, most recently, biology. Because the field encompasses so many different areas, it is often categorized according to types of materials (metals, ceramics, polymers, and semiconductors) or to their applications (biomaterials, electronic materials, magnetic materials, or structural materials).

The department prepares students for successful careers in materials science and engineering, for advanced study in science or engineering, and for professional education in other fields. The goal of the undergraduate program is to provide a rigorous and comprehensive curriculum in materials science and engineering as well as in mathematics, basic sciences, humanities, and social sciences. Our low student-to-faculty ratio allows students close contact with faculty in both classroom and research environments, as well as with other students and researchers in the department. The student is encouraged to proceed at his or her own rate and to participate in interdisciplinary, interdepartmental, and interschool programs. In the tradition of Johns Hopkins, all of our undergraduate students participate in research, often beginning in their sophomore year, working closely with faculty and graduate students.

In recognition that biomaterials and nanotechnology represent two of the most rapidly developing areas of materials science and engineering, the Department of Materials Science and Engineering offers challenging specializations in biomaterials or nanotechnology within its undergraduate program.

The field of biomaterials is concerned with the science and engineering of materials in biology and medicine. Engineering materials are increasingly used in applications such as drug delivery and gene therapy, scaffolds for tissue engineering, replacement body parts, and biomedical and surgical devices. Biomaterials is an inherently interdisciplinary field that requires deep understanding of the properties of materials in general, and the interactions of materials with the biological environment. The Biomaterials concentration is designed to provide a firm grounding in the physics, chemistry, and biology of materials, as well as breadth in general engineering, mathematics, humanities, and social science. In addition, students are encouraged to gain hands-on experience in biomaterials research laboratories. The program seeks to educate students to reach the forefront of leadership in the field of biomaterials engineering. While the fundamental principles of materials science still apply, a complete understanding of biomaterials and their interactions with biological environments requires a greater degree of specialization than the standard undergraduate curriculum provides. In recognition of completion of the Biomaterials concentration, a student may elect to have his or her academic transcript annotated to indicate a specialty in biomaterials.

Nanotechnology advances the utilization of materials and devices with extremely small dimensions. Nanotechnology is a visionary field, as micro and nanostructured devices impact all fields of engineering, from microelectronics (smaller, faster computer chips) to mechanical engineering (micromotors and actuators) to civil engineering (“smart,” self-healing nanocomposite materials for buildings and bridges) to biomedical engineering (biosensors and tissue engineering). Materials science is central to nanotechnology because the properties of materials can change dramatically when things are made extremely small. This observation is not simply that we need to measure such properties or develop new processing tools to fabricate nanodevices. Rather, our vision is that the wide (and sometimes unexpected) variety of phenomena associated with nanostructured materials allow us to envision radically new devices and applications that can only be made with nanostructured materials. The Nanotechnology concentration encompasses a curriculum designed to train students in the fundamental interdisciplinary principles of materials science including physics and chemistry, and also to expose students to the forefront of nanomaterials research through elective classes as well as research laboratories. Students in the Nanotechnology concentration will be well-prepared for successful careers in materials engineering across a wide range of disciplines. In recognition of completion of the Nanotechnology concentration, a student may elect to have his or her academic transcript annotated to indicate a specialty in nanotechnology.

The graduate curriculum provides students with a broad yet thorough grounding in the fundamentals of materials science and engineering. After completing the core curriculum, students pursuing master and Ph.D. degrees take advanced courses that will allow them to work at the forefront of knowledge in their chosen specialty. Those desiring to conduct original research and advance the frontiers of knowledge pursue a master’s essay and/or Ph.D. thesis. To this end, the department has an outstanding and wide-ranging research program, with particular emphasis on nanomaterials, thin films, metastable materials, biomaterials, computational materials science, and materials characterization.

Facilities
The teaching and research facilities of the Department of Materials Science and Engineering are located in Maryland and Krieger halls on the Homewood campus. Our central facilities include the Surface Analytical Laboratory, with advanced tools for the chemical characterization of solid surfaces; the Scanning Electron Microscopy Laboratory; the X-Ray Diffraction Laboratory; the Laboratory for Thin Film Deposition; and facilities for sample preparation, optical microscopy, and mechanical testing. Individual research groups have established laboratories with advanced facilities for materials processing, nanotechnology, and materials characterization. Through collaboration with other departments and national laboratories, students and faculty also have access to a variety of other facilities necessary for world-class research.

Undergraduate Programs
Materials play a central role in the performance and reliability of virtually every technology and living organism. The central theme of materials science and engineering is that the relationships between the structure, properties, processing, and performance of materials are crucial to their function. Materials scientists seek to understand these fundamental relationships, synthesize new materials, develop improved processes for making materials, and understand the role of materials in the functioning of biological organisms. The wide range of problems addressed makes
materials science one of the most highly interdisciplinary and dynamic engineering disciplines.

The Materials Science & Engineering faculty strives to maintain the Johns Hopkins University tradition of training a small number of students of the highest quality. We measure our success by the impact our graduates have on the scientific and engineering communities. Our program is designed to provide a solid foundation for future career development for students with diverse career aspirations.

Accreditation

Our BS program in Materials Science and Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Program Educational Objectives:
The program has as its objectives that within 3 to 5 years, our graduates will:

1. be engaged in advanced education, research, and development in materials science and engineering, including materials discovery and/or processing, or in professional disciplines that benefit from an understanding of MSE such as business, medicine or law.

2. employ elements of the materials research process in their careers including the use of:
   - critical reasoning to identify fundamental issues and establish directions for investigation
   - creative processes to define specific plans for problem solution
   - analytical thought to interpret results and place them within a broader context.

3. demonstrate ethical responsibility and an appreciation for the societal and global impact of their endeavors while maintaining their intellectual curiosity through lifelong learning.

Program Educational Outcomes:
Students graduating with a B.S. in Materials Science and Engineering will have demonstrated:

a) an ability to apply knowledge of mathematics, science, and engineering

b) an ability to design and conduct experiments, as well as to analyze and interpret data

c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

d) an ability to function on multidisciplinary teams

e) an ability to identify, formulate, and solve engineering problems

f) an understanding of professional and ethical responsibility

g) an ability to communicate effectively

h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

i) a recognition of the need for, and an ability to engage in life-long learning

j) a knowledge of contemporary issues

k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Enrollments and Graduates:

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Total Enrollment</th>
<th>BS Degrees Awarded</th>
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<tbody>
<tr>
<td>2012-2013</td>
<td>62</td>
<td>11</td>
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<tr>
<td>2017-2018</td>
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Requirements for the B.S. Degree

The Department of Materials Science and Engineering offers a program leading to the Bachelor of Science Degree. The B.S. for the Materials Science and Engineering degree program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org (http://www.abet.org). The student must meet the general university requirements for the chosen degree as well as the departmental requirements, and must complete the program approved by the student's advisor.

An anticipated individual program of study designed to meet the university and department requirements for the B.S. degree, as well as to reflect the student's interest, should be filed as early as possible during the student's residence. The faculty advisor's signature is required on all course registration and course change forms. As changes are made in the program, it shall be the student's responsibility to see that a revised program is filed with the advisor. Each student must have an approved program on file no later than the semester before he/she expects to graduate.

General university requirements include (see also General Requirements for Departmental Majors for more information):

- Complete program of study outlined by track or concentration (standard track, biomaterials concentration, or nanotechnology concentration).
- Fulfill the university writing requirement; two writing intensive courses, at least 3 credits each
- Fulfill the distribution requirement: 18 credits of courses coded (H) or (S), comprised of 6 courses at least 3 credits each. See the Distribution tab in the Requirements for a Bachelor's Degree (http://e-catalog.jhu.edu/undergrad-students/academic-policies/requirements-for-a-bachelors-degree) section for two exceptions to the rule that each H/S distribution course be at least 3 credits.
- Take a minimum of 126 credits.

To meet the course requirements for the B.S. degree in Materials Science and Engineering, the student must complete a minimum of 126 credits, distributed as follows:

| Materials Science Core Classes | 30 |
| Upper Level Materials Science Classes | 12 |
| Basic Sciences & Engineering | 28 |
| Mathematics | 20 |
| Humanities (H) or (S) | 18 |
In addition to the degree program in Materials Science and Engineering, students may elect to complete specialized concentrations in biomaterials or nanotechnology. Whether a student chooses to pursue studies following the standard track, the Biomaterials concentration or the Nanotechnology concentration, the course work specified for the degree will provide a firm grounding in the principles of materials science and engineering.

Three B.S. Degree Options are Offered by the Department of Materials Science and Engineering

**Standard Track**
The Standard Track is intended for those students with general materials science interests. It permits the student to tailor the degree program to specific interests by allowing a broad range of choices for upper-level science and engineering electives.

**Biomaterials Concentration**
Biomaterials is an exciting and rapidly developing field. Engineered materials are increasingly used in medical applications (such as drug delivery, gene therapy, scaffolds for tissue engineering, replacement body parts, and biomedical and surgical devices) while an understanding of structure-property relationships in natural biomaterials may lead to improved interventions for a wide variety of diseases and injuries. Because it is highly interdisciplinary (involving elements of materials science, engineering, biology, chemistry and medicine), biomaterials as a discipline requires a deep understanding of the properties of materials in general, and the interactions of materials with the biological environment in particular.

The biomaterials concentration is designed to provide a broad basis in the fundamentals of materials science and engineering, as well as a particular emphasis on the principles and applications of biomaterials. While the fundamental principles of materials science still apply, a complete understanding of biomaterials and their interactions with biological environments requires a greater degree of specialization than the standard undergraduate curriculum provides. The biomaterials curriculum includes topics such as biomimetic materials, natural biomaterials, host responses to biomaterials, biocompatibility, and applications of biomaterials, particularly in tissue engineering, drug delivery, and medical devices and implants. Our goal is to train students who can apply these principles to the development of novel materials that benefit human health.

To receive commendation for completion of the Biomaterials concentration, the student must complete three electives, whose subject matter is some aspect of Biomaterials, Molecules and Cells as a Science & Engineering elective, a biomaterials laboratory course, and complete a biomaterials-related senior design project. **Approval of electives must be made by a student’s academic advisor prior to taking the courses, and approval of the senior design project must be pre-approved by the senior design instructor.**

**Nanotechnology Concentration**
Nanotechnology advances the utilization of materials and devices with extremely small dimensions. Nanotechnology is a visionary field, as micro- and nano-structured devices impact all fields of engineering, including microelectronics (smaller, faster computer chips), mechanical engineering (micromotors and actuators), civil engineering (“smart”, self-healing nanocomposite materials for buildings and bridges), and biomedical engineering (biosensors and tissue engineering).

Materials science is central to nanotechnology because the properties of materials can change dramatically when things are made extremely small. This observation is not simply that we need to measure such properties or develop new processing tools to fabricate nanodevices. Rather, our vision is that the wide (and sometimes unexpected) variety of phenomena associated with nanostructured materials allow us to envision radically new devices and applications that can only be made with nanostructured materials. The nanotechnology concentration encompasses a curriculum designed to train students in the fundamental interdisciplinary principles of materials science, including physics and chemistry, and also to expose students to the forefront of nanomaterials research through elective classes and research laboratories. In recognition of completion of the Nanotechnology concentration, a student may elect to have his or her academic transcript annotated to indicate a concentration in nanotechnology.

To receive commendation for completion of the Nanotechnology concentration, the student must complete three electives, whose subject matter is some aspect of Nanotechnology, a nanomaterials laboratory course, and complete a nanotechnology-related senior design project. **Approval of electives must be made by a student’s academic advisor prior to taking the courses, and approval of the senior design project must be pre-approved by the senior design instructor.**

Detailed description of the B.S. program (course credits in parenthesis):

**Detailed Description of the B.S. Program**

**Materials Science Core Classes (30 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN.510.312</td>
<td>Thermodynamics/Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.313</td>
<td>Mechanical Properties of Materials</td>
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<td>EN.510.314</td>
<td>Electronic Properties of Materials</td>
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</tr>
<tr>
<td>EN.510.315</td>
<td>Physical Chemistry of Materials I</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.428</td>
<td>Biomaterials I</td>
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<td>EN.510.429</td>
<td>Material Science Laboratory I</td>
<td>6</td>
</tr>
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<td>EN.510.433</td>
<td>Senior Design Research</td>
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<tr>
<td>EN.510.434</td>
<td>Senior Design/Research II</td>
<td>6</td>
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<tr>
<td>or EN.510.438</td>
<td>Biomaterials Senior Design I</td>
<td></td>
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<tr>
<td>&amp; EN.510.439</td>
<td>and Biomaterials Senior Design II</td>
<td></td>
</tr>
<tr>
<td>or EN.510.440</td>
<td>Nanomaterials Senior Design I &amp; EN.510.441</td>
<td></td>
</tr>
</tbody>
</table>
Upper Level materials science electives each 300 level or higher. 12

Basic Sciences and Engineering (28 credits)
Must be passed with a letter grade of C- or higher. Both 030.101 and 030.102 may substitute for 510.101. Students are required to take both semesters of Intro. Chem Lab.

AS.171.101 General Physics: Physical Science Major I 4
AS.171.102 General Physics: Physical Science Major II 4
AS.173.111 General Physics Laboratory I 1
AS.173.112 General Physics Laboratory II 1
EN.510.101 Introduction to Materials Chemistry 3
AS.030.105 Introductory Chemistry Laboratory I 1
AS.030.106 Introductory Chemistry Laboratory II 1
AS.030.205 Introductory Organic Chemistry I 4
AS.030.225 Introductory Organic Chemistry Laboratory 3
EN.660.363 Leadership & Management in Materials Science and Engineering 3
EN.500.112 Gateway Computing 3

Mathematics (20 credits)
Must be passed with a letter grade of C- or higher
AS.110.108 Calculus I 4
AS.110.109 Calculus II (For Physical Sciences and Engineering) 4
AS.173.111 General Physics Laboratory I 1
AS.110.201 Linear Algebra 4
AS.110.302 Differential Equations and Applications 4

Humanities (H or S) (18 credits)
Must be passed with a letter grade of C- or higher (or S if the grade system is S/U). Introductory language courses, even if not with H or S designator, can substitute for H designated courses.

Science and Engineering Electives (9 credits)
Three courses of 200-level or above in engineering, natural sciences, or mathematics. At least one of the three electives must be from another department in the Whiting School of Engineering to ensure exposure to another engineering field. Must be passed with a letter grade of D or higher. For the Biomaterials concentration, one of the three electives must be 580.221: Molecules and Cells (4 credits) (students can substitute Cell Biology and Biochemistry for Molecules and Cells). For other students, a possible choice is 530.201: Statics and Mechanics (4 credits).

Unrestricted Electives (9 credits)
Must be passed with a letter grade of D or higher. A student who has taken both 030.101 and 030.102 may count one of them toward one unrestricted elective.

Total Credits Required for Graduation: 126
Biomaterials Concentration: 127 Credits

* Courses in other departments with an emphasis on the structure, properties, or processing of materials may be counted as materials science electives. A list of approved electives appears in the department’s Undergraduate Advising Manual (available from a student’s academic advisor). All 400-level or higher classes required in the Biomaterials and Nanotechnology concentrations will be counted toward satisfying the upper-level materials science electives requirement.

** Students are encouraged to also take the 1-credit introductory 510.109 Materials Science & Engineering for the 21st Century.

*** For the Biomaterials concentration, EN.580.221 Molecules and Cells must be passed with a grade of C or higher.

**** A student who has taken both 030.101 and 030.102 may count one of them toward one unrestricted elective.

Sample Undergraduate Programs for Materials Science and Engineering
Standard Track
(For a student beginning with Calculus I)

Year 1
Fall Credits Spring Credits
AS.030.101 Introductory Chemistry I 3 AS.030.102 Introductory Chemistry II 3
AS.110.108 Calculus I 4 AS.030.106 Introductory Chemistry Laboratory II 1
AS.030.105 Introductory Chemistry Laboratory I 1 AS.171.102 General Physics: Physical Science Major II 4
AS.171.101 General Physics: Physical Science Major I 4 AS.173.112 General Physics Laboratory II 1
AS.173.111 General Physics Laboratory I 1 AS.110.109 Calculus II (For Physical Sciences and Engineering) 4
EN.510.106 Foundations of Materials Science Engineering 3 Unrestricted Elective 3
EN.500.112 Gateway Computing 3

Year 2
Fall Credits Spring Credits
EN.510.311 Structure Of Materials 3 EN.510.312 Thermodynamics/ Materials 3
AS.030.205 Introductory Organic Chemistry I 4 AS.510.316 Biomaterials I 3
AS.110.202 Calculus III 4 EN.553.291 Linear Algebra and Differential Equations 4
Math /Sci/Eng elective 3 EN.553.310 Probability Statistics 4
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<thead>
<tr>
<th>Year 3</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tr>
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<td>H/S elective</td>
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<tr>
<td>EN.510.315 Physical Chemistry of Materials II</td>
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<td>EN.510.314 Electronic Properties of Materials</td>
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<td>EN.510.313 Mechanical Properties of Materials</td>
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<td>Math/Sci/Eng elective</td>
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<td>Math/Sci/Eng elective</td>
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**Biomaterials Concentration**
(For a student beginning with Calculus I)

<table>
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<tr>
<th>Year 1</th>
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<th>Spring</th>
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<td>AS.030.102 Introductory Chemistry II</td>
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<td>AS.110.108 Calculus I</td>
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<td>AS.030.106 Introductory Chemistry Laboratory II</td>
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<td>AS.030.105 Introductory Chemistry Laboratory I</td>
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<td>EN.510.106 Foundations of Materials Science Engineering</td>
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<td>EN.500.112 Gateway Computing</td>
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**Year 2**

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<tr>
<td>EN.510.311 Structure of Materials</td>
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<td>EN.510.312 Thermodynamics/ Materials</td>
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<td>AS.030.205 Introductory Organic Chemistry I</td>
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<td>AS.110.202 Calculus III</td>
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<td>H/S Elective</td>
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<tr>
<td>EN.580.221 Molecules and Cells (This Math/Sci/Eng elective is required for Biomaterials Concentration)</td>
<td>4</td>
<td>EN.553.291 Linear Algebra and Differential Equations</td>
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<tr>
<td>H/S Elective</td>
<td>3</td>
<td>EN.553.310 Probability Statistics</td>
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**Year 3**

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<tr>
<td>EN.510.315 Physical Chemistry of Materials II</td>
<td>3</td>
<td>EN.510.314 Electronic Properties of Materials</td>
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<tr>
<td>EN.510.313 Mechanical Properties of Materials</td>
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<td>EN.510.429 Materials Science Laboratory II</td>
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<td>EN.510.428 Material Science Laboratory I</td>
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<td>H/S elective</td>
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<tr>
<td>EN.660.363 Leadership Management in Materials Science and Engineering</td>
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<td>Unrestricted Elective</td>
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<td><strong>Total Credits:</strong></td>
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**Year 4**

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<tr>
<td>EN.510.315 Senior Design Research</td>
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<td>EN.510.434 Senior Design/ Research II</td>
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<td>510.### - MSE elective</td>
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<td>H/S elective</td>
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**Nanotechnology Concentration**
(For a student beginning with Calculus I)

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<th>Spring</th>
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<tr>
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<td>AS.030.102 Introductory Chemistry II</td>
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<td>AS.173.111 General Physics Laboratory I</td>
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<td>AS.110.109 Calculus II (For Physical Sciences and Engineering)</td>
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<td>EN.510.106 Foundations of Materials Science Engineering</td>
<td>3</td>
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<td>Year 1</td>
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<td>3</td>
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<th>Year 2</th>
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<tr>
<td>EN.510.311</td>
<td>Structure Of Materials</td>
<td>3</td>
<td>EN.510.312</td>
<td>Thermodynamics/Materials</td>
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<td>AS.030.205</td>
<td>Introductory Organic Chemistry I</td>
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<td>EN.510.316</td>
<td>Biomaterials I</td>
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<td>AS.110.202</td>
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<td>EN.530.201</td>
<td>Statics and Mechanics of Materials</td>
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<th>Year 3</th>
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<tr>
<td>EN.510.315</td>
<td>Physical Chemistry of Materials II</td>
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<td>Electronic Properties of Materials</td>
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<td>Material Science Laboratory I</td>
<td>3</td>
<td>H/S Elective</td>
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<tr>
<td>EN.660.363</td>
<td>Leadership Management in Materials Science and Engineering</td>
<td>3</td>
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<td>Math/Sci/Eng Elective</td>
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<th>Year 4</th>
<th>Fall</th>
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<tr>
<td>EN.510.440</td>
<td>Nanomaterials Senior Design I</td>
<td>3</td>
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<td>Nanomaterials Senior Design II</td>
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<td>510.4## - MSE Elective (e.g. Nanomaterials Lab)</td>
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<td>510.4## - MSE Elective (e.g. Micro Nano Materials &amp; Devices)</td>
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<td>510.4## - MSE Elective (e.g. Materials Characterization)</td>
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<td>510.4## - MSE Elective (e.g. Nanoparticles)</td>
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<td>H/S Elective</td>
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</table>

Total Credits: 127

* Students are encouraged to take this course and count it as an unrestricted elective.

Financial Aid
Information about scholarships and other sources of financial assistance for undergraduates is available from Student Financial Services (http://pages.jh.edu/~finaid). In addition, the faculty employs a number of undergraduates as laboratory assistants to help with various aspects of their individual research programs.

Graduate Programs
The Department of Materials Science and Engineering (DMSE) offers three graduate degrees: the Ph.D. (Doctor of Philosophy), the M.S.E. (Master of Science in Engineering), and the M.M.S.E. (Master of Materials Science and Engineering). The Ph.D. and the M.S.E. can be completed on either a full-time or part-time basis (with advanced approval from the program). Financial aid is available only for students admitted to the full-time Ph.D. program. The M.S.E. degree may be completed either with or without an essay, as described below.

Hopkins undergraduate students are encouraged to consider completing both the B.S. degree and the M.S.E. degree in a total of five years. This five-year, dual degree option offers additional preparation for the pursuit of Ph.D. programs and careers in materials science and engineering. Students are encouraged to consult their undergraduate advisors to gain information on M.S.E. programs at Hopkins, as well as third- and fourth-year course selections best suited to the pursuit of the M.S.E. degree.

The M.M.S.E. is a terminal master's degree offered through Johns Hopkins Engineering for Professionals (EP) of the Whiting School of Engineering. The degree program consists of 10 courses offered primarily in the evening. Students interested in this program should apply through the EP Office, 410.516.2300 or www.ep.jhu.edu.

Admission
To be admitted to graduate study in the Department of Materials Science and Engineering, students must submit credentials sufficient to convince the faculty that they have the potential to successfully complete the program requirements. Under the new GRE test, applicants should take the General Test package containing the Mathematical Reasoning test.

Hopkins undergraduate students who plan to pursue a M.S.E. degree in their fifth year are encouraged to submit an application early in their fourth year of study.

A graduate student pursuing a Ph.D. degree with the Department of Materials Science and Engineering who is funded by the department as
a teaching assistant or research assistant may not enroll simultaneously in a master’s program in another department, unless he or she receives written approval from his or her advisor, the DMSE Graduate Program Committee, and the department chairman.

Advising and Review of Student Performance

Each graduate student will normally have one or more faculty advisors. Students who are entering the M.S.E. program and plan to pursue a degree without an essay will be assigned an academic advisor. Students who are entering the M.S.E. program and plan to pursue a degree with an essay will be advised by their research advisor. Students who are entering the Ph.D. program will be advised by their research advisor. Students with a research advisor in another department will be assigned an internal academic advisor from among the full-time faculty in the department.

Student progress will be assessed regularly by the faculty advisor(s) and the Graduate Program Committee. Students are expected to remain in regular communication with their faculty advisor(s).

Each student’s progress will be reviewed annually by the Graduate Program Committee, in consultation with the student’s advisor(s). To assist in this evaluation, students are required to submit a form (available from the academic program coordinator) detailing progress toward completion of the degree requirements. This form must be signed by the student’s advisor(s) and filed with the Graduate Program Committee each year. The department must be convinced that all academic requirements have been satisfied by the candidate before a recommendation to confer a graduate degree is passed on to the University Graduate Board.

Grade requirements for graduate course work differ according to the degree program, as described below. All graduate students are required to maintain an overall grade point average of 3.0 or higher; failure to do so will ordinarily be cause for dismissal from the program. Independent research courses will not be counted toward completion of course requirements.

The department believes that teaching experience is important to professional growth; therefore, a student may be required to serve as a teaching assistant during his or her academic career.

Fulltime credit enrollment requirement for WSE graduate students:

• All WSE Graduate Students must be enrolled in at least 9 credits to maintain fulltime status (in fall/spring semesters).
• Typically, fulltime WSE PhD students will be enrolled in a combination of WSE classes and/or research for a total of 20 WSE credits per semester (fall/spring).
• Typically, fulltime WSE Masters students will be enrolled in a combination of classes and/or research for a total of 9-10 credits a semester (fall/spring).

Requirements for the M.S.E. Degree with Essay

(8 courses)

The degree of Master of Science in Engineering (M.S.E.) with Essay is awarded subject to the recommendation of the student’s advisor and departmental approval, based on satisfactory completion of the following requirements:

** Academic Ethics (EN.500.603) and:

Three core courses in Materials Science and Engineering
EN.510.601 Structure Of Materials 3
EN.510.602 Thermodynamics Of Materials 3
EN.510.603 Phase Transformations of Materials 3

• Two 600-level or higher and three 400-level or higher electives in materials science and engineering or related fields subject to the following rules:
  • Each elective must be worth at least three credits. Multiple courses that add up to three credits may be used in place of one three-credit course with approval from the Master’s Degree Committee.
  • Up to two of the elective courses may be taken from within the Engineering for Professionals (EP) part-time program.
  • Up to two of the electives may be business courses.
  • Any elective taken from outside the department (including all EP courses) requires prior approval of the Master’s Degree Committee. The Master’s Degree Committee will determine the appropriate number of credits for any elective taken outside the Whiting School of Engineering.
  • With approval of the Master’s Degree Committee, the student can transfer up to two graduate courses from another institution. Students desiring such credit must make the request in writing to the Master’s Degree Committee by the end of the first semester after matriculation. This request must include a description of the course, a course syllabus, and documentation of the grade received. Please note that transfer coursework grades do not count towards calculation of the GPA.
  • Responsible Conduct of Research training (AS.360.624 or AS.360.625) in accordance with the Whiting School of Engineering policy. Details about this requirement, including the criteria for determining whether the online or in-person course must be taken, are provided in the description of the policy.
  • Training on academic ethics in accordance with the Whiting School of Engineering policy. This requirement can be satisfied by passing EN.500.603 (Academic Ethics).
  • A grade of C or better must be achieved in each course to obtain credit.
  • A overall grade point average of 3.0 must be maintained, and a grade point average of a 3.0 is required to earn the degree at the end of the program.
  • Attendance is required at the weekly Department of Materials Science and Engineering Seminar.

** A master’s essay or journal publication is required. A Master’s essay must be approved by one faculty reader and confirm to the requirements of the Graduate Board. For a journal publication a student must submit to the Master’s Degree Committee an article describing his or her original research that has been published (or accepted for publication) in an archival, peer-reviewed technical journal. The student must be the primary author of the article.

Research for the master’s essay or journal publication may be conducted with a corporate sponsor through the INBT Co-Op Program.

Admission to the M.S.E. program is through the standard graduate admissions process. The typical duration of the program is 21 months. The student’s transcript will reflect a “Master of Science in Engineering with Essay.”

Requirements for the M.S.E. Degree without Essay

(10 courses)

The degree of Master of Science in Engineering (M.S.E.) is awarded subject to the recommendation of the student’s advisor and departmental approval, based on satisfactory completion of the following requirements:

Academic Ethics (EN.500.603) and:

Three core courses in Materials Science and Engineering
EN.510.601 Structure Of Materials 3
EN.510.602 Thermodynamics Of Materials 3
EN.510.603 Phase Transformations of Materials 3
Admission to the M.S.E. program is through the standard graduate admissions process. The typical duration of the program is 12 months. The student’s transcript will reflect a “Master of Science in Engineering.”

Requirements for the Ph.D. degree
To receive the Ph.D. degree, the candidate must fulfill the requirements below. The department must be satisfied that all academic requirements have been satisfied by the candidate before a recommendation will be made to the University Graduate Board to confer the Ph.D. degree.

1. Successful completion of four required courses in materials science and engineering.

EN.510.601 Structure Of Materials 3
EN.510.602 Thermodynamics Of Materials 3
EN.510.603 Phase Transformations of Materials 3
EN.510.615 Physical Properties of Materials 3

Each of the four required courses must be passed with a letter grade of B- or higher. If a student receives a grade of C+ or lower in a required course, the student may re-take the course once to achieve a grade of B- or higher. Receipt of grades of C+ or lower in two or more required courses will ordinarily be cause for dismissal from the program without the opportunity to re-take those courses.

In addition, the student must maintain an overall GPA of 3.0 or better in the four required courses. If the student’s GPA falls below 3.0, the student must re-take one or more of the required courses and earn higher grade(s). Upon doing so the prior grade(s) in those course(s) are replaced and not counted toward the GPA.

The four required courses must be successfully completed (meeting the grade and GPA requirements above) no later than the start of the student’s third year after matriculation; failure to do so will result in dismissal from the program. Exception: A student who fails to meet the requirements above due to a low grade in a single required course, and who has not had an opportunity to re-take that course during the first two years, will be permitted to re-take that one course in the third year.

Students who have completed prior graduate-level coursework similar to EN.510.601 Structure Of Materials, EN.510.602 Thermodynamics Of Materials or EN.510.603 Phase Transformations of Materials may petition the Graduate Program Committee to waive one of these required courses. Alternatively, students with undergraduate degrees in Materials Science may petition the Graduate Program Committee to waive the Physical Properties course. However, only one of the four required courses can be waived. If approved, the course that has been waived will not be counted toward calculation of the GPA as described above. Written requests for such waivers must be submitted to the Graduate Program Committee no later than the end of the first semester after matriculation. Please note that transfer credits do not count towards calculation of the GPA.

2. Successful completion of three advanced (600-level or higher) elective courses in materials science and engineering or a related field.

Elective courses must be completed with a grade of C or higher, but there is no cumulative GPA requirement. A list of approved electives is available from the Academic Program Coordinator. Students wishing to use a course not on this list must submit a request to the Graduate Program Committee. The Master’s Degree Committee must approve the course before it can be taken. Students who have completed prior graduate-level coursework may petition the Graduate Program Committee to waive one of the required elective courses.

Graduate research (EN.510.807-EN.510.808), part-time graduate courses (from Engineering for Professionals in WSE or Advanced Academic Programs in KSAS), and seminars (courses with less than three contact hours per week) will not be counted toward completion of PhD course requirements. Undergraduate courses (400-level or lower) will not be counted unless they are cross-listed as graduate level, 600 or higher. Independent study courses may be used with prior approval of the Graduate Program Committee.

Students who have completed prior graduate-level coursework may petition the Graduate Program Committee to waive one of the required elective courses. Written requests for such waivers must be submitted to the Graduate Program Committee no later than the end of the first semester after matriculation.

In some cases an advisor may require a student to complete additional coursework, beyond the four required courses and three electives described above.

3. Teaching Assistant Requirement: Students in their second year in the department will be required to act as teaching assistant for two courses.

4. Completion of Academic Ethics (EN.500.603)

5. Successful completion of a comprehensive oral examination covering fundamentals of materials science and engineering. The comprehensive examination tests knowledge in each of the subjects listed below.

---Structure of materials
– Thermodynamics of materials
– Phase transformations in materials

In each of the three subject areas, students may be asked questions related to the properties of materials. The depth of required knowledge regarding properties of materials will match the level of knowledge presented in the Physical Properties of Materials class.

Successful completion of the comprehensive exam requires satisfactory performance on all areas tested; there are no partial or conditional passes.

The comprehensive exam is offered semiannually, usually immediately prior to the fall and spring semesters. A student who fails the exam on the first try may make a second attempt, but the exam must be successfully completed no later than the start of the third year following matriculation. Failure to do so will result in dismissal from the program.

6. An oral presentation of a proposal for a research project to form the basis of the candidate’s dissertation.

The dissertation proposal must be presented at a department seminar no later than the end of the third year following matriculation. A written version of the dissertation proposal must be submitted to a faculty committee consisting of the student’s faculty advisor and two other faculty members (to be selected in consultation with the advisor) no later than two weeks prior to the oral presentation. A brief closed session between the student and the committee shall follow the presentation, at which the committee members will ask questions about and provide comments on the proposed plan of research. Additional private discussions may be required by one or more committee members. The thesis proposal is also an examination, with the committee testing the candidate’s depth of knowledge in his or her area of specialization (and not simply on the specific proposed research).

7. Completion of an original research project, documented in a dissertation that is defended by the candidate in a public presentation.

Candidates must write a dissertation conforming to university requirements that describes their work and results in detail. A public defense of the dissertation is required, and will be followed by a closed examination session. The committee for the closed examination shall consist of five faculty members, approved by the Graduate Program Committee, with at least two members being from outside the department. The outcome of the closed examination will be decided by majority vote of the committee. Because the closed examination session fulfills the university Graduate Board Oral (GBO) examination requirement, all procedures pertaining to GBOs as established by the University Graduate Board must be followed.

The committee may impose certain conditions (e.g. changes to the dissertation) for the candidate to meet prior to final certification that he or she has passed the exam. For this reason, the thesis defense must be scheduled for a date at least two months prior to any personal or university deadline for graduation. A complete draft of the dissertation must be submitted to all committee members no later than two weeks prior to the defense.

The dissertation in its final form must be read and approved in writing by two members of the committee (the advisor and one other member to be chosen by the committee as a whole).

Financial Aid
Fellowships of various forms are available for full-time graduate students (typically for PhD as opposed to MSE students), including tuition remission fellowships, teaching fellowships, and additional stipend fellowships.

Research assistantships are available to support full-time graduate students who work with individual professors on their research contracts and grants.

For current faculty and contact information go to http://materials.jhu.edu/index.php/people/

Faculty
Chair
Jonah Erlebacher
Professor: Nanostructured materials, self-organization and pattern formation, computational materials science, kinetics of shape change, ultra-high vacuum processing, nanoporous metals, fuel cells and energy.

Professors
Mingwei Chen
Professor: Research is primarily focused on the relationship between the structure and properties of advanced materials, particularly non-equilibrium and nanostructured materials.

Michael Falk
Professor: Theoretical and computational research investigating materials processes far from equilibrium: deformation, failure and fracture in non-crystalline materials such as metallic glasses; reactive materials, interactions of stress and diffusion in energy storage materials; mixing processes that accompany frictional sliding and wear.

Kalina Hristova
Professor: Biomolecular materials, structure and function of cellular membranes, membrane proteins, self-assembly of biological amphiphiles, protein-lipid interactions, protein synthesis, X-ray diffraction, fluorescence.

Todd C. Hufnagel
Professor: Structure and properties of amorphous alloys; mechanical behavior of metals, polymers, and biomaterials; use of synchrotron radiation for in situ studies of deformation and phase transformations in materials; electron microscopy.

Howard E. Katz
Professor: Organic, hybrid, nanostructured, and interfacial materials in electronic and photonic devices; organic materials synthesis, thin film fabrication and patterning; novel architectures for devices, sensors, and circuits; host-guest chemistry, material responses to high electric fields; organic nonlinear optics; nanoparticles in biosystems; materials for physical science education.

Hai-Quan Mao
Professor: Nanomaterials, electrospinning, nanofibers, biomimetic matrix, stem cell expansion and differentiation, nerve regeneration, micellar nanoparticle, therapeutic delivery, biodegradable polymers.

Peter C. Searson
Professor: Biomaterials, nanomedicine.

James B. Spicer
Professor: Ultrafast phenomena, laser interactions with materials, nanostructured composite materials, sensor physics, laser-based
materials processing, elastic and anelastic materials properties,
intelligent materials processing, near-field optical and microwave
techniques.

Timothy P. Weihs
Professor: The study of exothermic reactions in layered materials
and their applications, processing and characterization of thin films,
mechanical testing of metals and biological materials, nanoindentation
studies.

Assistant Professors
Anthony Shoji Hall
Investigation of chemical reactions catalyzed by solid surfaces to
address problems in renewable energy storage and utilization.

Tim Mueller
Computational materials discovery and design.

Associate Research Professor
Patricia M. McGuiggan
Adhesion, tribology, tribocharging, atomic force microscopy, interfacial
phenomena, wetting, interferometry, polymer and ceramic materials.

Senior Lecturer
Orla Wilson
Senior Lecturer

Research Faculty
Kenneth Levi
Director of Materials Characterization & Processing Facility

Joint, Part-Time, and Visiting Appointments
Kit Bowen
E. Emmet Reid Professor (Chemistry): experimental chemical physics-
photoelectron spectroscopy of negative ions, structure and dynamics of
gas phase, weakly bound molecular clusters.

Collin Broholm
Gerhard H. Dieke Professor (Director, Institute for Quantum Matter)
Physics & Astronomy: experimental condensed matter physics

Chia-Ling Chien
Jacob L. Hain Professor of Physics (Physics & Astronomy): Fabrication
of experimental studies of structural, electronic, magnetic, and super-
conducting properties of nanostructured solids; magneto-electronics,
manipulation of small entities in low Reynolds number regime,
biosensing.

Michael Edidin
Professor (Biology): membrane organization and dynamics, immunology
studied with nanoparticles and advanced microscopy.

Jaafar El-Awady
Assistant Professor: Multiscale materials modeling, damage and fracture
mechanisms of materials in mechanical design, material degradation in
extreme environments, nano-materials and structures, impact dynamics
and wave propagation.

Jennifer H. Elisseff
Professor (Biomedical Engineering): tissue engineering, biomaterials,
cartilage regeneration.

D. Howard Fairbrother
Professor (Chemistry): surface chemistry, electron induced deposition
of nanostructured materials, environmental health and safety of
nanomaterials.

Sharon Gerecht
Associate Professor (Chemical and Biomolecular Engineering):
biomaterials, stem cells, biomimetic hydrogels, vascular differentiation,
angiogenesis, regenerative medicine, hypoxia, microfluidics.

Somnath Ghosh
Professor (Civil Engineering): computational mechanics with focus on
materials analysis, characterization and processing, including simulation
and design.

David Gracias
Professor (Chemical & Biomolecular Engineering): micro and
nanotechnology, surface science, metamaterials, complex systems,
nanoelectrics, nanomedicine, regenerative medicine, drug delivery and
microfluidics.

Warren Grayson
Assistant Professor (Biomedical Engineering): Tissue engineering, stem
cells, bioreactors, biomaterials, orthopaedics

Jordan Green
Assistant Professor (Biomedical Engineering): cellular engineering,
nanobiotechnology, biomaterials, controlled drug delivery and gene
delivery.

Kevin J. Hemker
Professor (Mechanical Engineering): mechanical behavior of materials,
transmission on electron microscopy, high temperature alloys, thermal
barrier coatings, nanocrystalline materials and materials for MEMS.

Robert Ivkov
Visiting Assistant Professor, Radiation Oncology (JHU School of
Medicine): development, characterization, and use of nanomaterials to
target cancer and to enhance the effectiveness of other therapies such as
radiation. A specific area of research includes the study and development
of selective heating with magnetic nanoparticles.

Lynne Jones
Associate Professor (Orthopaedic Surgery, School of Medicine):
biomaterials, osteonecrosis pathogenesis and treatment, total joint
arthroplasty, bone graft materials.

Rangaramanujam Kannan
Professor: Ophthalmology, JHU School of Medicine

Felizh MacGabhann
Assistant Professor: computational modeling of growth factor-receptor
networks, personalized medicine; individualized medicine; experimental
studies of interindividual variation, therapeutic cardiovascular
remodeling, novel methods for data visualization and automated image
analysis, computational models of virus-host interactions.

Tyrel McQueen
Assistant Professor (Chemistry): Solid State and Inorganic Chemistry/
Condensed Matter Physics

Thao (Vicky) Nguyen
Assistant Professor (Mechanical Engineering): Biomechanics:
mechanical behavior, growth and remodeling of fibrous soft tissues.
Constitutive Modeling: thermomechanics, viscoelasticity, viscoplasticity

K.T. Ramesh
Alonzo G. Decker Jr. Professor of Science and Engineering (Mechanical Engineering): Nanomaterials, planetary impact, dynamic failure mechanisms, shock, impact, and wave propagation, high-strain-rate behavior of materials, injury biomechanics, constitutive and failure modeling.

John D. Tovar
Professor (Chemistry): materials-oriented synthetic organic chemistry, electrochemistry, pi-conjugated and conducting polymers, supramolecular chemistry, organic electronics, biomimetic electronic materials.

Tza-Huei (Jeff) Wang
Professor (Mechanical Engineering): cell adhesion and migration, cell mechanics, cysto-skeleton physics, receptor-ligand interactions, cancer bioengineering, progeria, particle tracking methods.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses

**EN.510.101. Introduction to Materials Chemistry. 3.0 Credits.**
Basic principles of chemistry and how they apply to the behavior of materials in the solid state. The relationship between electronic structure, chemical bonding, and crystal structure is developed. Attention is given to characterization of atomic and molecular arrangements in crystalline and amorphous solids: metals, ceramics, semiconductors, and polymers (including proteins). Examples are drawn from industrial practice (including the environmental impact of chemical processes), from energy generation and storage (such as batteries and fuel cells), and from emerging technologies (such as biomaterials). Students may receive credit for AS.030.103 or EN.510.101, but not both.
Prerequisites: Students may receive credit for AS.030.103 or EN.510.101, but not both.
Instructor(s): P. Mcguiggan
Area: Natural Sciences.

**EN.510.105. Chocolate: An Introduction to Materials Science. 1.0 Credit.**
This course will introduce students to some basic concepts in materials science including phase diagrams, crystallization, and various characterization techniques, all through the close examination of chocolate. Students will have the opportunity to try some of their own experiments to see these processes in action. This course is directed toward freshman or sophomore engineering and natural science students with no previous background in these topics.
Instructor(s): J. Dailey
Area: Engineering, Natural Sciences.

**EN.510.106. Foundations of Materials Science & Engineering. 3.0 Credits.**
Basic principles of materials science and engineering and how they apply to the behavior of materials in the solid state. The relationship between electronic structure, chemical bonding, and crystal structure is developed. Attention is given to characterization of atomic and molecular arrangements in crystalline and amorphous solids: metals, ceramics, semiconductors and polymers (including proteins). The processing and synthesis of these different categories of materials. Basics about the phase diagrams of alloys and mass transport in phase transformations. Introduction to materials behavior including their mechanical, chemical, electronic, magnetic, optical and biological properties.
Instructor(s): E. Ma
Area: Engineering, Natural Sciences.

**EN.510.107. Modern Alchemy. 3.0 Credits.**
Can you really turn lead into gold? Converting common substances into useful materials that play important roles in today's technologies is the goal of many modern scientists and engineers. In this course, we will survey selected topics related to modern materials, the processes that are used to make them as well as the inspiration that led to their development. Topics will include the saga of electronic paper, the sticky stuff of gecko feet and the stretchy truth of metal rubber.
Instructor(s): J. Spicer
Area: Engineering, Natural Sciences.

**EN.510.109. Materials Science & Engineering for the 21st Century. 1.0 Credit.**
Through this course, students are introduced to the basic tenants of the field of materials science and engineering and important aspects of career development. Discussions will cover the range of career options in the field, the opportunities to engage with cutting edge research and technology at JHU, the skills that practitioners require and the ethical conundrums that engineering professionals navigate. Only available to Materials Science & Engineering freshmen and engineering undecided freshmen.
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences.

**EN.510.135. MSE Design Team I. 3.0 Credits.**
This course is the first half of a two-semester course sequence for freshmen majoring or double majoring in materials science and engineering (MSE). This course provides a broad exposure to various aspects of planning and conducting independent research in a team setting (3 to 6 students on each team). In this course, MSE freshmen working with a team leader and seniors on the team, apply their general knowledge in MSE to develop the solution to open-ended problems.
Materials Science & Engineering Freshman Only. Recommended Course Background: EN.510.106, EN.510.109, or equivalent courses. *The team will meet 150 minutes per week at a time to be designated by the instructor.
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences.
EN.510.136. MSE Design Team I. 3.0 Credits.
This course is the second half of a two-semester course sequence for freshmen majoring or double majoring in materials science and engineering (MSE). This course provides a broad exposure to various aspects of planning and conducting independent research in a team setting (3 to 6 students on each team). In this course, MSE freshmen working with a team leader and seniors on the team, apply their general knowledge in MSE to develop the solution to open-ended problems. Materials Science & Engineering Freshman Only. Recommended Course Background: EN.510.106, EN.510.109, or equivalent courses. *The team will meet 150 minutes per week at a time to be designated by the instructor.
Instructor(s): H. Mao; O. Wilson; P. Searson
Area: Engineering, Natural Sciences.

EN.510.201. Introductory Materials Science for Engineers. 3.0 Credits.
An introduction to the structure, properties, and processing of materials used in engineering applications. After beginning with the structure of materials on the atomic and microscopic scales, this course explores defects and their role in determining materials properties, the thermodynamics and kinetics of phase transformations, and ways in which structure and properties can be controlled through processing. Previously: Introduction to Engineering Materials.
Instructor(s): E. Ma
Area: Engineering, Natural Sciences.

EN.510.202. Computation and Programming for Materials Scientists and Engineers. 3.0 Credits.
This course will introduce students to the basics of programming in the MATLAB environment. Students will build skills in algorithmic problem solving by programming assignments regarding a range of biological and non-biological materials systems. Students will learn to write function definitions and deploy basic operations of selection and iteration as well as MATLAB specific vectorization methods and the construction of graphical user interfaces. Applications may include materials structure, phase equilibrium, propagating reactions, and other relevant scientific and engineering applications.
Instructor(s): T. Mueller
Area: Engineering, Natural Sciences.

EN.510.235. MSE Design Team I. 3.0 Credits.
This course is the first half of a two-semester course sequence for sophomores majoring or double majoring in materials science and engineering (MSE). This course provides a broad exposure to various aspects of planning and conducting independent research in a team setting (3 to 6 students on each team). In this course, MSE freshmen working with a team leader and seniors on the team, apply their general knowledge in MSE to develop the solution to open-ended problems. Materials Science & Engineering Sophomores Only. Recommended Course Background: EN.510.106, EN.510.109, or equivalent courses. *The team will meet 150 minutes per week at a time to be designated by the instructor.
Instructor(s): O. Wilson.

EN.510.236. MSE Design Team I. 3.0 Credits.
This course is the second half of a two-semester course sequence for sophomores majoring or double majoring in materials science and engineering (MSE). This course provides a broad exposure to various aspects of planning and conducting independent research in a team setting (3 to 6 students on each team). In this course, MSE freshmen working with a team leader and seniors on the team, apply their general knowledge in MSE to develop the solution to open-ended problems. Materials Science & Engineering Sophomores Only. Recommended Course Background: EN.510.106, EN.510.109, or equivalent courses. *The team will meet 150 minutes per week at a time to be designated by the instructor.
Instructor(s): H. Mao; O. Wilson; P. Searson
Area: Engineering, Natural Sciences.

EN.510.311. Structure Of Materials. 3.0 Credits.
First of the Introduction to Materials Science series, this course seeks to develop an understanding of the structure of materials starting at the atomic scale and building up to macroscopic structures. Topics include bonding, crystal structures, crystalline defects, symmetry and crystallography, microstructure, liquids and amorphous solids, diffraction, molecular solids and polymers, liquid crystals, amphiphilic materials, and colloids. This course contains computational modules; some prior knowledge of computer programming is needed. Recommended Course Background: EN.510.202 (Computation and Programming for Materials Scientists and Engineers) or equivalent.
Prerequisites: ((AS.110.106 AND AS.110.107) OR (AS.110.108 AND AS.110.109) OR (AS.110.107 AND AS.110.108) OR (AS.110.106 OR AS.110.109)) AND (AS.030.103 OR (AS.030.101 AND AS.030.102)) AND (((AS.171.101 OR AS.171.103 OR AS.171.107) AND (AS.171.102 OR AS.171.104 OR AS.171.108))
Instructor(s): A. Hall
Area: Engineering, Natural Sciences.

EN.510.312. Thermodynamics/Materials. 3.0 Credits.
Second of the Introduction to Materials Science series, this course examines the principles of thermodynamics as they apply to materials. Topics include fundamental principles of thermodynamics, equilibrium in homogeneous and heterogeneous systems, thermodynamics of multicomponent systems, phase diagrams, thermodynamics of defects, and elementary statistical thermodynamics. This course contains computational modules; some prior knowledge of computer programming is needed. Recommended Course Background: EN.510.202 (Computation and Programming for Materials Scientists and Engineers) or equivalent.
Instructor(s): E. Ma
Area: Engineering, Natural Sciences.

EN.510.313. Mechanical Properties of Materials. 3.0 Credits.
Third of the Introduction to Materials Science series, this course is devoted to a study of the mechanical properties of materials. Lecture topics include elasticity, anelasticity, plasticity, and fracture. The concept of dislocations and their interaction with other lattice defects is introduced. This course contains computational modules; some prior knowledge of computer programming is needed. Recommended Course Background: EN.510.202 (Computation and Programming for Materials Scientists and Engineers) or equivalent.
Prerequisites: EN.510.311
Instructor(s): T. Hufnagel
Area: Engineering, Natural Sciences.
EN.510.314. Electronic Properties of Materials. 3.0 Credits.
Fourth of the Introduction to Materials Science series, this course is devoted to a study of the electronic, optical and magnetic properties of materials. Lecture topics include electrical and thermal conductivity, thermoelectricity, transport phenomena, dielectric effects, piezoelectricity, and magnetic phenomena. This course contains computational modules; some prior knowledge of computer programming is needed. Recommended Course Background: EN.510.202 (Computation and Programming for Materials Scientists and Engineers) or equivalent.
Prerequisites: EN.510.311
Instructor(s): H. Katz
Area: Engineering, Natural Sciences.

EN.510.315. Physical Chemistry of Materials II. 3.0 Credits.
Fifth of the Introduction to Materials Science series, this course covers diffusion and phase transformations in materials. Topics include Fick’s laws of diffusion, atomic theory of diffusion, diffusion in multi-component systems, solidification, diffusional and diffusionless transformations, and interfacial phenomena. This course contains computational modules; some prior knowledge of computer programming is needed. Recommended Course Background: EN.510.202 (Computation and Programming for Materials Scientists and Engineers) or equivalent.
Prerequisites: EN.510.311 AND EN.510.312
Instructor(s): T. Mueller
Area: Engineering, Natural Sciences.

EN.510.316. Biomaterials I. 3.0 Credits.
Sixth of the Introduction to Materials Science series, this course offers an overview of principles and properties of biomedical materials. Topics include properties of materials used in medicine, synthesis and properties of polymeric materials, polymeric biomaterials, natural and recombinant biomaterials, biodegradable materials, hydrogels, stimuli-sensitive materials, and characterizations of biomaterials. This course contains computational modules; some prior knowledge of computer programming is needed. Recommended Course Background: EN.510.202 (Computation and Programming for Materials Scientists and Engineers) or equivalent.
Instructor(s): H. Mao
Area: Engineering, Natural Sciences.

EN.510.335. MSE Design Team I. 3.0 Credits.
This course is the first half of a two-semester course sequence for freshmen, sophomores, and juniors majoring or double majoring in materials science and engineering (MSE). This course provides a broad exposure to various aspects of planning and conducting independent research in a team setting (3 to 6 students on each team). In this course, MSE freshmen, sophomores, and juniors, working with a team leader and seniors on the team, apply their general knowledge in MSE to develop the solution to open-ended problems. *The team will meet 150 minutes per week at a time to be designated by the instructor. Recommended Course Background: EN.510.101, EN.510.109, or equivalent courses.
Instructor(s): H. Mao; O. Wilson
Area: Engineering, Natural Sciences.

EN.510.336. MSE Design Team II. 3.0 Credits.
This course is the second half of a two-semester course sequence for juniors majoring or double majoring in materials science and engineering (MSE). This course provides a broad exposure to various aspects of planning and conducting independent research in a team setting (3 to 6 students on each team). In this course, MSE juniors working with a team leader and seniors on the team, apply their general knowledge in MSE to develop the solution to open-ended problems. Materials Science & Engineering Freshman Only. Recommended Course Background: EN.510.106, EN.510.109, or equivalent courses. *The team will meet 150 minutes per week at a time to be designated by the instructor.
Prerequisites: EN.510.335
Instructor(s): H. Mao; J. Spicer; O. Wilson; P. Searson
Area: Engineering, Natural Sciences.

EN.510.400. Introduction to Ceramics. 3.0 Credits.
This course will examine the fundamental structure and property relationships in ceramic materials. Areas to be studied include the chemistry and structure of ceramics and glasses, microstructure and property relationships, ceramic phase relationships, and ceramic properties. Particular emphasis will be placed on the physical chemistry of particulate systems, characterization, and the surface of colloid chemistry of ceramics. Recommended Course Background: EN.510.311, EN.510.312, or permission of instructor.
Instructor(s): P. Mcguiggan
Area: Engineering, Natural Sciences.

EN.510.401. Macromolecular Drug Carriers. 3.0 Credits.
This course will describe the various types of environmental chemical attack (corrosion) resulting in degradation of materials, as well as the loss of mechanical stability caused by cyclic fatigue, other mechanical loading, and thermal cycling. In addition, we will discuss advanced nondestructive evaluation techniques for detecting fatigue, corrosion, and thermal damage in structures in service.
Instructor(s): M. Herrera-Alonso
Area: Engineering, Natural Sciences.

EN.510.402. Soft Materials. 3.0 Credits.
The structure and properties of soft materials will be studied with the focus on understanding ways to control and measure the dynamics. Soft materials to be studied include colloids, emulsions, dispersions, drops, polymers and gels. We will use experimental tools to study these materials including optical microscopy, rheometers, and atomic force microscopy. Recommended Course Background: EN.510.311 or permission of instructor.
Instructor(s): P. Mcguiggan
Area: Engineering, Natural Sciences.

EN.510.403. Materials Characterization. 3.0 Credits.
This course will describe a variety of techniques used to characterize the structure and composition of engineering materials, including metals, ceramics, polymers, composites and semiconductors. The emphasis will be on microstructural characterization techniques, including optical and electron microscopy, X-ray diffraction, and thermal analysis and surface analytical techniques, including Auger electron spectroscopy, secondary ion mass spectroscopy, X-ray photoelectron spectroscopy, and atomic force microscopy. Working with the JHU museums, we will use the techniques learned in class to characterize historic artifacts.
Instructor(s): P. Mcguiggan
Area: Natural Sciences.
EN.510.405. Materials Science of Energy Technologies. 3.0 Credits.
This course examines the science and engineering of contemporary and cutting-edge energy technologies. Materials Science and Mechanical Engineering fundamentals in this area will be complemented by case studies that include fuel cells, solar cells, lighting, thermoelectrics, wind turbines, engines, nuclear power, biofuels, and catalysis. Students will consider various alternative energy systems, and also to research and engineering of traditional energy technologies aimed at increased efficiency, conservation, and sustainability. Recommended Course Background: undergraduate course in thermodynamics.
Instructor(s): J. Erlebacher
Area: Engineering, Natural Sciences.

EN.510.407. Biomaterials II: Host response and biomaterials applications. 3.0 Credits.
This course focuses on the interaction of biomaterials with the biological system and applications of biomaterials. Topics include host reactions to biomaterials and their evaluation, cell-biomaterials interaction, biomaterials for tissue engineering applications, biomaterials for controlled drug and gene delivery, biomaterials for cardiovascular applications, biomaterials for orthopedic applications, and biomaterials for artificial organs. Also listed as EN.510.607.
Prerequisites: EN.510.316 or permission of instructor.
Instructor(s): L. Gu
Area: Engineering, Natural Sciences.

EN.510.409. Melting, Smelting, Refining and Casting. 3.0 Credits.
This is a laboratory class on metal formation, an area that underlies almost all other technologies. We will examine extraction of metals from ore, refining of metals. The kinetics of melting and solidification will be explored in the context of casting and forming.
Prerequisites: EN.510.311 AND EN.510.312 AND EN.510.313 AND EN.510.315
Instructor(s): T. Hufnagel
Area: Engineering, Natural Sciences.

EN.510.412. Introduction to and Applications of Scanning Probe Microscopy. 3.0 Credits.
Scanning Probe Microscopy has emerged as one of the premier techniques to characterize surfaces. This course will give an overview of the family of SPM techniques including scanning tunneling microscopy (STM), atomic force microscopy (AFM), scanning near field optical microscopy (SNOM) and Kelvin probe microscopy. In each of these applications, the theory of operation, measurement and imaging techniques, and experimental limitations will be discussed. Also listed as 510.632.
Instructor(s): P. Mcquiggin
Area: Engineering, Natural Sciences.

EN.510.415. The Chemistry of Materials Synthesis. 3.0 Credits.
Many of the latest breakthroughs in materials science and engineering have been driven by new approaches to their synthesis, which has allowed the preparation of materials with fanciful structures and fascinating properties. This advanced course will explore synthetic approaches to multifunctional and nanostructured materials, ranging from opals to complex polymers to nanowires and quantum dots. Applications include electronics, energetics, and drug delivery. Participants will gain sufficient familiarity with synthesis options to be able to design research programs that rely on them. Emphasis will be placed on broad strategies that lead to material functionality, rather than detailed step-by-step sequences. Some topics will be selected “on the fly” from the most exciting current literature.
Instructor(s): H. Katz
Area: Engineering, Natural Sciences.

EN.510.416. Physical Behavior of Metamaterials. 3.0 Credits.
The field of metamaterials is a rapidly evolving area within the physical and engineering sciences that relates to diverse applications such as transformation optics for advanced imaging, acoustic noise reduction for architectural spaces and electromagnetic shielding for electronic devices. The goal of metamaterials design is to guide energy transport through specified regions of a material avoiding others that might contain delicate or otherwise susceptible structures that must be shielded. Energy transport can occur via electromagnetic waves, acoustic waves, electrical currents or thermal fluxes. Through rational design of the material micro/meso/macrostructure, any one of these can be effectively directed in the material. The challenge is to engineer materials that respond in a way that approximates the desired design. In this course, the methods for metamaterials design will be investigated along with those aspects of materials science and engineering that allow for the fabrication of these materials. Also listed as EN.510.616
Prerequisites: EN.510.31 AND EN.510.314 or their equivalents
Instructor(s): J. Spicer.

EN.510.418. Electronic and Photonic Processes and Devices. 3.0 Credits.
This course is intended for advanced undergraduates and graduate students and will cover the fundamentals and properties of electronic and optical materials and devices. Subject matter will include a detailed and comprehensive discussion of the physical processes underlying modern electronic and optical devices. Detailed descriptions of modern semiconductor devices such as lasers and detectors used in optical communications and information storage and processing will be presented. Also listed as EN.510.618/EN.510.418.
Instructor(s): T. Poehler
Area: Engineering, Natural Sciences.

EN.510.420. Stealth Science & Engineering. 3.0 Credits.
The goal of stealth engineering is the creation of objects that are not easily detected using remote sensing techniques. To achieve this end, engineered systems of materials are arrayed to alter the signature of objects by reducing energy returned to remote observers. This course will provide an introduction to the general principles behind signature reduction by examining the mathematics and science behind basic electromagnetic and acoustic transport processes. Specific topics will include energy absorbing materials, anti-reflection coatings, wave guiding and scattering, metamaterials and adaptive screens. Co-listed with EN.510.640
Instructor(s): J. Spicer
Area: Engineering, Natural Sciences.

EN.510.421. Nanoparticles. 3.0 Credits.
Nanoparticles - one-dimensional materials with diameters of nearly atomic dimension - are one of the most important classes of nanostructured materials because their unusual properties that often differ significantly from bulk materials. This course will explore the synthesis, structure and properties of nanoparticles. Applications of nanoparticles in medicine, optics, sensing, and catalysis will be discussed, with an emphasis will be on metal nanoparticles and semiconductor quantum dots.
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences.
EN.510.422. Micro and Nano Structured Materials & Devices. 3.0 Credits.
Almost every material's property changes with scale. We will examine ways to make micro- and nano-structured materials and discuss their mechanical, electrical, and chemical properties. Topics include the physics and chemistry of physical vapor deposition, thin film patterning, and microstructural characterization. Particular attention will be paid to current technologies including computer chips and memory, thin film sensors, diffusion barriers, protective coatings, and microelectromechanical (MEMS) devices.
Instructor(s): A. Hall, E. Ma
Area: Engineering, Natural Sciences.

EN.510.424. Physical Science of Paper. 3.0 Credits.
An exploration of paper's past, present, and possible future from the physical science and engineering perspectives. Includes an in-depth analysis of the defining physical, chemical, and electronic properties of paper since its origins in China as early as 202 BCE and the periodic technological innovations that improved quality, lowered price, and expanded use. Applications include paper as a medium for historic heritage artifacts and their conservation. Recommended: AS.030.205 Organic Chemistry I
Prerequisites: EN.510.101 OR (AS.030.101 AND AS.030.102)
Instructor(s): J. Baty
Area: Engineering, Natural Sciences.

EN.510.426. Biomolecular Materials I - Soluble Proteins and Amphiphiles. 3.0 Credits.
This course will examine the fundamental structure, interactions, and function relationship for biological macromolecules. The course will emphasize experimental methods and experimental design, and the physics behind human disease. Topics will include micellization, protein folding and misfolding, and macromolecular interactions. Recommended Course Background: EN.580.221 Co-listed with EN.510.621
Instructor(s): K. Hristova
Area: Engineering, Natural Sciences.

EN.510.427. Chemistry of Nanomaterials. 3.0 Credits.
This course introduces the fundamental principles necessary to understand the behavior of materials at length scales larger than atoms or molecules with applications in chemistry and materials science. This course will explore topics such as nanoparticle synthesis and self assembly, ordered porous materials, catalysis, nanostructured thin films, and solar energy conversion. Size dependent properties of nanomaterials will be discussed. Co-listed with EN.510.661.
Instructor(s): A. Hall
Area: Engineering, Natural Sciences.

EN.510.428. Material Science Laboratory I. 3.0 Credits.
This course focuses on characterizing the microstructure and mechanical properties of structural materials that are commonly used in modern technology. A group of A1 alloys, Ti alloys, carbon and alloy steels, and composite materials that are found, for example, in actual bicycles will be selected for examination. Their microstructures will be studied using optical metallography, scanning electron microscopy, X-ray diffraction, and transmission electron microscopy. The mechanical properties of these same materials will be characterized using tension, compression, impact, and hardness tests. The critical ability to vary microstructure and therefore properties through mechanical and heat treatments will also be demonstrated and investigated in the above materials. Restricted to Materials Science & Engineering juniors only
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Corequisites: EN.510.313
Writing Intensive.
Area: Engineering, Natural Sciences

EN.510.429. Materials Science Laboratory II. 3.0 Credits.
This laboratory concentrates on the experimental investigation of electronic properties of materials using basic measurement techniques. Topics include thermal conductivity of metal alloys, electrical conductivity of metals/metal alloys and semiconductors, electronic behavior at infrared wavelengths, magnetic behavior of materials, carrier mobility in semiconductors and the Hall effect in metals and semiconductors. Lab Assignment is by Professor. Recommended Course Background: EN.510.311 or Permission Required.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences
Writing Intensive.

EN.510.430. Biomaterials Lab. 3.0 Credits.
This laboratory course concentrates on synthesis, processing and characterization of materials for biomedical applications, and characterization of cell-materials interaction. Topics include synthesis of biodegradable polymers and degradation, electrospinning of polymer nanofibers, preparation of polymeric microspheres and drug release, preparation of plasmid DNA, polymer-mediated gene delivery, recombinant protein synthesis and purification, self-assembly of collagen fibril, surface functionalization of biomaterials, cell culture techniques, polymer substrates for cell culture, and mechanical properties of biological materials. Recommended Course Background: EN.510.407
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): K. Hristova
Area: Engineering, Natural Sciences
Writing Intensive.
EN.510.433. Senior Design Research. 3.0 Credits.
This course is the first half of a two-semester sequence required for seniors majoring or double majoring in materials science and engineering. It is intended to provide a broad exposure to many aspects of planning and conducting independent research. During this semester, students join ongoing graduate research projects for a typical 10-12 hours per week of hands-on research. Classroom activities include discussions, followed by writing of research pre-proposals (white papers), proposals, status reports and lecture critiques of the weekly departmental research seminar. Co-listed with EN.510.438 and EN.510.440
Prerequisites: Prereq: EN.510.311 and 510.312 and EN.510.428 and 510.429
Instructor(s): O. Wilson
Area: Engineering
Writing Intensive.

EN.510.434. Senior Design/Research II. 3.0 Credits.
This course is the second half of a two-semester sequence required for seniors majoring or double majoring in materials science and engineering. It is intended to provide a broad exposure to many aspects of planning and conducting independent research. Recommended Course Background: EN.510.311-EN.510.312, EN.510.428-EN.510.429, and EN.510.433 Meets with EN.510.439, EN.510.441, EN.510.446, and EN.510.448
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences
Writing Intensive.

EN.510.435. Mechanical Properties of Biomaterials. 3.0 Credits.
This course will focus on the mechanical properties of biomaterials and the dependence of these properties on the microstructure of the materials. Organic and inorganic systems will be considered through a combination of lectures and readings and the material systems will range from cells to bones to artificial implants. Same course as 510.635.
Instructor(s): T. Weihs
Area: Engineering, Natural Sciences.

EN.510.438. Biomaterials Senior Design I. 3.0 Credits.
This course is the first half of a two-semester sequence required for seniors majoring in materials science and engineering with the Biomaterials Concentration. It is intended to provide a broad exposure to many aspects of planning and conducting independent research with a focus on biomaterials. During this semester, students join ongoing graduate research projects for a typical 10-12 hours per week of hands-on experiences in design and research. Classroom activities include discussions, followed by writing of research pre-proposals (white papers), proposals, status reports and lecture critiques of departmental research seminars. Co-listed with EN.510.440 and EN.510.433
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences
Writing Intensive.

EN.510.439. Biomaterials Senior Design II. 3.0 Credits.
This course is the second half of a two-semester sequence required for seniors majoring in materials science and engineering with the Biomaterials Concentration. It is intended to provide a broad exposure to many aspects of planning and conducting independent research with a focus on biomaterials. During this semester, verbal reporting of project activities and status is emphasized, culminating in student talks presented to a special session of students and faculty. Students also prepare a poster and a written final report summarizing their design and research results. Recommended Course Background: EN.510.311-EN.510.312, EN.510.428-EN.510.429, and EN.510.433 or 510.438 or 510.440 Meets with EN.510.434, EN.510.441, EN.510.446, and EN.510.448
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences
Writing Intensive.

EN.510.440. Nanomaterials Senior Design I. 3.0 Credits.
This course is the first half of a two-semester sequence required for seniors majoring in materials science and engineering with the Nanotechnology Concentration. It is intended to provide a broad exposure to many aspects of planning and conducting independent research with a focus on nanotechnology and nanomaterials. During this semester, students join ongoing graduate research projects for a typical 10-12 hours per week of hands-on experiences in design and research. Classroom activities include discussions, followed by writing of research pre-proposals (white papers), proposals, status reports and lecture critiques of departmental research seminars. Co-listed with EN.510.433 and EN.510.438
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences
Writing Intensive.

EN.510.441. Nanomaterials Senior Design II. 3.0 Credits.
This course is the second half of a two-semester sequence required for seniors majoring in materials science and engineering with the Nanotechnology Concentration. It is intended to provide a broad exposure to many aspects of planning and conducting independent research with a focus on nanotechnology and nanomaterials. Students also prepare a poster and a written final report summarizing their design and research results. Recommended Course Background: EN.510.311-EN.510.312, EN.510.428-EN.510.429, and EN.510.433 or 510.438 or 510.440 Meets with EN.510.434, EN.510.439, EN.510.444, and EN.510.448
Instructor(s): O. Wilson
Area: Engineering, Natural Sciences
Writing Intensive.
EN.510.442. Nanomaterials Lab. 3.0 Credits.
The objective of the laboratory course will be to give students hands on experience in nanotechnology based device fabrication through synthesis, patterning, and characterization of nanoscale materials. The students will use the knowledge gained from the specific synthesis, characterization and patterning labs to design and fabricate a working nanoscale/nanostructured device. The course will be augmented with comparisons to microscale materials and technologies. These comparisons will be key in understanding the unique phenomena that enable novel applications at the nanoscale. DMSE Seniors or permission of the instructor.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): O. Wilson; P. Mcguiggan
Area: Engineering, Natural Sciences.

EN.510.443. Chemistry and Physics of Polymers. 3.0 Credits.
The course will describe and evaluate the synthetic routes, including condensation and addition polymerization, to macromolecules with varied constituents and properties. Factors that affect the efficiencies of the syntheses will be discussed. Properties of polymers that lead to technological applications will be covered, and the physical basis for these properties will be derived. Connections to mechanical, electronic, photonic, and biological applications will be made. Also listed as EN.510.643. Recommended Course Background: Organic Chemistry I and one semester of thermodynamics.
Instructor(s): H. Katz
Area: Engineering, Natural Sciences.

EN.510.444. MSE Bone Marrow Design Team. 3.0 Credits.
This course is the first half of a two-semester course sequence for senior students majoring or double majoring in MSE. This course provides current seniors with the opportunity to continue working on a design team project they were involved in as juniors while taking independent senior design (510.433 or equivalent). In this course, MSE seniors, working with a team leader and a group of freshmen, sophomores, and seniors, continue to apply their knowledge in their track area to generate the solution to open-ended problems encountered in MSE. Recommended Course Background: EN.510.101, EN.510.311, EN.510.312, EN.510.428, EN.510.429. Meets with EN.510.434, EN.510.439, EN.510.441 and EN.510.448.
Prerequisites: EN.510.445
Instructor(s): H. Mao; J. Spicer; O. Wilson; P. Searson
Area: Engineering, Natural Sciences Writing Intensive.

EN.510.446. MSE Design Team II. 3.0 Credits.
This course is the second half of a two-semester course sequence for senior students majoring or double majoring in MSE. This course provides a broad experience to various aspects of planning and conducting independent research in a team setting (3 to 6 students on each team). In this course, MSE seniors, working with a team leader and a group of freshmen, sophomores, and seniors, apply their knowledge in their track area to generate the solution to open-ended problems encountered in MSE. Materials Science & Engineering Seniors Only. Recommended Course Background: EN 510.101, EN 510.311, EN 510.312, EN 510.428, EN 510.429. Meets with EN.510.434, EN.510.439, EN.510.441, and EN.510.446
Prerequisites: EN.510.447
Instructor(s): H. Mao; O. Wilson
Area: Engineering, Natural Sciences Writing Intensive.

EN.510.447. MSE Design Team Leader. 4.0 Credits.
This course is the first half of a two-semester course sequence for students majoring or double majoring in MSE. This course provides a leadership experience to various aspects of planning and conducting independent research in a team setting. In this course, MSE seniors assemble and lead a student team consisting of 3 to 6 students, apply their knowledge in their track area, and develop leadership skills to generate the solution to open-ended problems encountered in MSE. Recommended Course Background: EN.510.101, EN.510.311, EN.510.312, EN.510.428, EN.510.429.
Instructor(s): H. Mao; O. Wilson
Area: Engineering, Natural Sciences Writing Intensive.

EN.510.448. MSE Design Team Leader. 4.0 Credits.
This course is the second half of a two-semester course sequence for students majoring or double majoring in MSE. This course provides a leadership experience to various aspects of planning and conducting independent research in a team setting. In this course, MSE seniors assemble and lead a student team consisting of 3 to 6 students, apply their knowledge in their track area, and develop leadership skills to generate the solution to open-ended problems encountered in MSE. Materials Science & Engineering Seniors Only. Recommended Course Background: EN 510.101, EN 510.311, EN 510.312,EN. 510.428, EN.510.429. Meets with EN.510.434, EN.510.439, EN.510.441, and EN.510.446
Prerequisites: EN.510.447
Instructor(s): H. Mao; J. Spicer; O. Wilson; P. Searson
Area: Engineering, Natural Sciences Writing Intensive.

EN.510.449. MSE Bone Marrow Design Team II. 3.0 Credits.
This course is the second half of a two-semester course sequence for senior students majoring or double majoring in MSE. This course provides current seniors with the opportunity to continue working on a design team project they were involved in as juniors while taking independent senior design (510.433 or equivalent). In this course, MSE seniors, working with a team leader and a group of freshmen, sophomores, and seniors, continue to apply their knowledge in their track area to generate the solution to open-ended problems encountered in MSE. Recommended Course Background: EN.510.101, EN.510.311, EN.510.312, EN.510.428, EN.510.429.
Instructor(s): H. Mao; O. Wilson
Area: Engineering, Natural Sciences Writing Intensive.
EN.510.457. Materials Science of Thin Films. 3.0 Credits.
The processing, structure, and properties of thin films are discussed emphasizing current areas of scientific and technological interest. Topics include elements of vacuum science and technology; chemical and physical vapor deposition processes; film growth and microstructure; chemical and microstructural characterization methods; epitaxy; mechanical properties such as internal stresses, adhesion, and strength; and technological applications such as superlattices, diffusion barriers, and protective coatings. Co-listed with EN.510.657
Instructor(s): T. Weihs
Area: Engineering, Natural Sciences.

EN.510.501. Undergraduate Research/Material Science. 3.0 Credits.
Student participation in ongoing research activities. Research is conducted under the supervision of a faculty member and often in conjunction with other members of the research group.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): Staff.

EN.510.502. Research in Materials Science. 0.0 - 3.0 Credits.
Student participation in ongoing research activities. Research is conducted under the supervision of a faculty member and often in conjunction with other members of the research group.
Instructor(s): Staff.

EN.510.503. Independent Study/Materials Science. 3.0 Credits.
Individual programs of study are worked out between students and the professor supervising their independent study project. Topics selected are those not formally listed as regular courses and include a considerable design component.
Instructor(s): R. Cammarata.

EN.510.504. Independent Study. 0.0 - 3.0 Credits.
Individual programs of study are worked out between students and the professor supervising their independent study project. Topics selected are those not formally listed as regular courses and include a considerable design component.
Instructor(s): A. Hall, P. Searson; T. Hufnagel.

EN.510.511. Group Undergraduate Research/Material Science. 3.0 Credits.
Student participation in ongoing research activities. Research is conducted under the supervision of a faculty member and often in conjunction with other members of the research group. This section has a weekly research group meeting that students are expected to attend.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): Staff.

EN.510.597. Research - Summer. 3.0 Credits.
Instructor(s): Staff.

EN.510.601. Structure Of Materials. 3.0 Credits.
An introduction to the structure of inorganic and polymeric materials. Topics include the atomic scale structure of metals, alloys, ceramics, and semiconductors; structure of polymers; crystal defects; elementary crystallography; tensor properties of crystals; and an introduction to the uses of diffraction techniques (including X-ray diffraction and electron microscopy) in studying the structure of materials. Recommended Course Background: undergraduate chemistry, physics, and calculus or permission of instructor.
Instructor(s): M. Chen.

EN.510.602. Thermodynamics Of Materials. 3.0 Credits.
An introduction to the classical and statistical thermodynamics of materials. Topics include the zeroth law of thermodynamics; the first law (work, internal energy, heat, enthalpy, heat capacity); the second law (heat engines, Carnot cycle, Clausius inequality, entropy, absolute temperature); equilibrium of single component systems (free energy, thermodynamic potentials, virtual variations, chemical potential, phase changes); equilibrium of multicomponent systems and chemical thermodynamics; basics of statistical physics (single and multiple particle partition functions, configurational entropy, third law; statistical thermodynamics of solid solutions); and equilibrium composition-temperature phase diagrams. Recommended Course Background: undergraduate calculus, chemistry, and physics or permission of instructor.
Instructor(s): P. Searson.

EN.510.603. Phase Transformations of Materials. 3.0 Credits.
This course presents a unified treatment of the thermodynamics and kinetics of phase transformations from phenomenological and atomistic viewpoints. Phase transformations in condensed metal and nonmetal systems are discussed. Recommended Course Background: EN.510.601 and EN.510.602
Instructor(s): E. Ma.

EN.510.604. Mechanical Properties of Materials. 3.0 Credits.
An introduction to the properties and mechanisms that control the mechanical performance of materials. Topics include mechanical testing, tensor description of stress and strain, isotropic and anisotropic elasticity, plastic behavior of crystals, dislocation theory, mechanisms of microscopic plasticity, creep, fracture, and deformation and fracture of polymers. Recommended Course Background: EN.510.601
Instructor(s): T. Hufnagel.

EN.510.605. Electrical, Optical and Magnetic Properties of Materials. 3.0 Credits.
An overview of electrical, optical and magnetic properties arising from the fundamental electronic and atomic structure of materials. Continuum materials properties are developed through examination of microscopic processes. Emphasis will be placed on both fundamental principles and applications in contemporary materials technologies. Recommended Course Background: EN.510.601
Instructor(s): J. Spicer.

EN.510.606. Polymer Chemistry & Biology. 3.0 Credits.
An introduction to the chemical and biological properties of organic and inorganic materials. Topics include an introduction to polymer science, polymer synthesis, chemical synthesis, and modification of inorganic materials, biomineralization, biosynthesis, and properties of natural materials (proteins, DNA, and polysaccharides), structure-property relationships in polymeric materials (synthetic polymers and structural proteins), and materials for biomedical applications. Recommended Course Background: undergraduate chemistry and biology or permission of instructor.
Instructor(s): M. Herrera-Alonso.
EN.510.607. Biomaterials II: Host response and biomaterials applications. 3.0 Credits.
This course focuses on the interaction of biomaterials with the biological system and applications of biomaterials. Topics include host reactions to biomaterials and their evaluation, cell-biomaterials interaction, biomaterials for tissue engineering applications, biomaterials for controlled drug and gene delivery, biomaterials for cardiovascular applications, biomaterials for orthopedic applications, and biomaterials for artificial organs. Recommended Course Background: EN.510.606. Also listed as EN.510.407
Instructor(s): L. Gu.

EN.510.608. Electrochemistry. 3.0 Credits.
Thermodynamics of electrochemical interfaces, including electrochemical potential, the Nernst equation, ion-solvent interactions, and double layer theory. Charge transfer kinetics for activation and diffusion controlled processes. Analysis of kinetics at various electrodes, including redox reactions, metal-ion electrodes, and semiconductor electrodes. Electroanalytical techniques are discussed, including those related to bioelectrochemistry and semiconductor electrochemistry. Selected reactions of technological importance are evaluated, including the hydrogen evolution reaction, oxygen reduction, electrodeposition, and energy generation and storage. Recommended Course Background: introductory chemistry or permission of instructor.
Instructor(s): P. Searson.

EN.510.611. Solid State Physics. 3.0 Credits.
An introduction to solid state physics for advanced undergraduates and graduate students in physical science and engineering. Topics include crystal structure of solids; band theory; thermal, optical, and electronic properties; transport and magnetic properties of metals, semiconductors, and insulators. The concepts of solid state principles in modern electronic, optical, and structural materials are discussed. Cross-listed with Electrical and Computer Engineering.
Instructor(s): T. Poehler.

EN.510.612. Solid State Physics. 3.0 Credits.
Basic solid state physics principles applied to modern electronic, optical, and structural materials. Topics discussed will include magnetism, superconductivity, polymers, nano-structured materials, electronic effects, and surface physics. For advanced undergraduates and graduate students in physical science and engineering. Recommended Course Background: EN.510.611
Instructor(s): T. Poehler.

EN.510.614. Macromolecular Drug Carriers. 3.0 Credits.
In this course we will discuss recent literature findings regarding the design, synthesis, fabrication and characterization of macromolecular materials used as drug carriers. Topics include polymer synthesis, post-polymerization modification, structure-property relationships of nano- and micro-particles and hydrogels. Recommended Course Background: General Chemistry. Also listed as 510.401.
Instructor(s): M. Herrera-Alonso
Area: Engineering, Natural Sciences.

EN.510.615. Physical Properties of Materials. 3.0 Credits.
A detailed survey of the relationship between materials properties and underlying microstructure. Structure/property/processing relationships will be examined across a wide spectrum of materials including metals, ceramics, polymers and biomaterials, and properties including electrical, magnetic, optical, thermal, mechanical, chemical and biocompatibility.
Instructor(s): P. Mcguigan
Area: Engineering, Natural Sciences.

EN.510.616. Physical Behavior of Metamaterials. 3.0 Credits.
The field of metamaterials is a rapidly evolving area within the physical and engineering sciences that relates to diverse applications such as transformation optics for advanced imaging, acoustic noise reduction for architectural spaces and electromagnetic shielding for electronic devices. The goal of metamaterials design is to guide energy transport through specified regions of a material avoiding others that might contain delicate or otherwise susceptible structures that must be shielded. Energy transport can occur via electromagnetic waves, acoustic waves, electrical currents or thermal fluxes. Through rational design of the material micro/meso/macrostructure, any one of these can be effectively directed in the material. The challenge is to engineer materials that respond in a way that approximates the desired design. In this course, the methods for metamaterials design will be investigated along with those aspects of materials science and engineering that allow for the fabrication of these materials. Also listed as EN.510.416
Instructor(s): J. Spicer.

EN.510.618. Electronic and Photonic Processes and Devices. 3.0 Credits.
This course is intended for advanced undergraduates and graduate students and will cover the fundamentals and properties of electronic and optical materials and devices. Subject matter will include a detailed and comprehensive discussion of the physical processes underlying modern electronic and optical devices. Detailed descriptions of modern semiconductor devices such as lasers and detectors used in optical communications and information storage and processing will be presented. Also listed as EN.510.618/EN.510.418.
Instructor(s): T. Poehler.

EN.510.621. Biomolecular Materials I - Soluble Proteins and Amphiphiles. 3.0 Credits.
Instructor(s): K. Hristova
Area: Engineering, Natural Sciences.
EN.510.630. Molecular Simulation of Materials. 3.0 Credits.
Learn the fundamentals necessary to design and implement computer simulations on the molecular level. This course focuses on two widely used techniques: molecular-dynamics and Monte Carlo simulation. Both are introduced in the context of a review of the basic theoretical background. This class will cover the specifics of handling molecular interactions using empirical potentials, applying proper boundary conditions and simulating various equilibrium ensembles and non-equilibrium systems. Lectures will address how to extract transport coefficients, atomic scale correlations and local stresses and strains from simulation data, and computational issues such as algorithmic complexity and efficiency. The final weeks of the course will focus on new and cutting-edge advances in these methods.
Instructor(s): M. Falk
Area: Engineering, Natural Sciences.

EN.510.632. Introduction to and Applications of Scanning Probe Microscopy. 3.0 Credits.
Scanning Probe Microscopy has emerged as one of the premier techniques to characterize surfaces. This course will give an overview of the family of SPM techniques including scanning tunneling microscopy (STM), atomic force microscopy (AFM), scanning near field optical microscopy (SNOM) and Kelvin probe microscopy. In each of these applications, the theory of operation, measurement and imaging techniques, and experimental limitations will be discussed. Also listed as EN.510.412
Instructor(s): P. Mcguiggan
Area: Engineering, Natural Sciences.

EN.510.633. Computational Materials Design. 3.0 Credits.
This course will cover the use of computational methods to discover and design materials for new technologies. Topics addressed will include structure prediction, materials informatics, and the calculation of material properties from first principles using methods such as density functional theory. Participants will gain hands-on experience with modern computational techniques.
Instructor(s): T. Mueller
Area: Engineering, Natural Sciences.

EN.510.634. Simulation of Biomolecules and Membranes. 3.0 Credits.
This class will provide an overview of methods for molecular simulation of biomolecules and membranes. We will study methods for atomic detail molecular dynamics and Monte Carlo simulations. After discussing basic algorithms such as integrators, thermostat, and barostats, we will study how biomolecules are chemically parameterized to accurately capture their conformational equilibria. This knowledge will then be used to build, simulate, and analyse a molecular model of a membrane protein embedded in a lipid bilayer. The simulation will be used to understand how these methods can be used to obtain insights into the molecular mechanisms of protein function.
Instructor(s): M. Ulmschneider
Area: Engineering, Natural Sciences.

EN.510.635. Mechanical Properties of Biomaterials. 3.0 Credits.
This course will focus on the mechanical properties of biomaterials and the dependence of these properties on the microstructure of the materials. Organic and inorganic systems will be considered through a combination of lectures and readings and the material systems will range from cells to bones to artificial implants. Same course as 510.435
Instructor(s): T. Weihrs
Area: Engineering, Natural Sciences.

EN.510.640. Stealth Engineering. 3.0 Credits.
The goal of stealth engineering is the creation of objects that are not easily detected using remote sensing techniques. To achieve this end, engineered systems of materials are arrayed to alter the signature of objects by reducing energy returned to remote observers. This course will provide an introduction to the general principles behind signature reduction by examining the mathematics and science behind basic electromagnetic and acoustic transport processes. Specific topics will include energy absorbing materials, anti-reflection coatings, wave guiding and scattering, metamaterials and adaptive screens. Co-listed with EN.510.420.
Instructor(s): J. Spicer
Area: Engineering, Natural Sciences.

EN.510.643. Chemistry and Physics of Polymers. 3.0 Credits.
The course will describe and evaluate the synthetic routes, including condensation and addition polymerization, to macromolecules with varied constituents and properties. Factors that affect the efficiencies of the syntheses will be discussed. Properties of polymers that lead to technological applications will be covered, and the physical basis for these properties will be derived. Connections to mechanical, electronic, photonic, and biological applications will be made. Also listed as EN.510.443. Recommended Course Background: Organic Chemistry I and one semester of thermodynamics.
Instructor(s): H. Katz
Area: Engineering, Natural Sciences.

EN.510.657. Materials Science of Thin Films. 3.0 Credits.
The processing, structure, and properties of thin films are discussed emphasizing current areas of scientific and technological interest. Topics include elements of vacuum science and technology; chemical and physical vapor deposition processes; film growth and microstructure; chemical and microstructural characterization methods; epitaxy; mechanical properties such as internal stresses, adhesion, and strength; and technological applications such as superlattices, diffusion barriers, and protective coatings. Co-listed with EN.510.457
Instructor(s): T. Weihs
Area: Engineering, Natural Sciences.

EN.510.659. Physics & Properties of Low-Dimensional Nanomaterials. 3.0 Credits.
This course is intended for advanced undergraduates and graduate students and will cover the fundamentals and properties of low dimensional nanomaterials. Subject matter will include a detailed and comprehensive discussion of the physics and physical properties of solids confined in either one, two or three directions. Features examined for these low dimensional materials will include electronic structure, electrical transport, vibrational and thermal transport in low dimensional systems such as graphene, carbon nanotubes, quantum wires, semiconductor and metal nanoparticles. Co-listed with EN.510.459.
Instructor(s): T. Poehler
Area: Engineering, Natural Sciences.

EN.510.661. Chemistry of Nanomaterials. 3.0 Credits.
This course introduces the fundamental principles necessary to understand the behavior of materials at length scales larger than atoms or molecules with applications in chemistry and materials science. This course will explore topics such as nanoparticle synthesis and self assembly, ordered porous materials, catalysis, nanostructured thin films, and solar energy conversion. Size dependent properties of nanomaterials will be discussed. Co-listed with EN.510.427
Instructor(s): A. Hall
Area: Engineering.
EN.510.701. Three-Dimensional Microstructural Characterization of Materials. 3.0 Credits.
A graduate-level introduction to experimental techniques and data analysis for characterizing the microstructure of materials in three dimensions. Topics to be covered include serial sectioning, principles of optical and scanning-electron microscopy and electron back-scatter diffraction (EBSD), high-energy x-ray diffraction microscopy, and techniques for 3D data reduction, representation, and analysis.
Prerequisites: EN.510.601 or Permission of instructor.
Instructor(s): T. Hufnagel
Area: Engineering, Natural Sciences.

EN.510.801. Materials Research Seminar. 1.0 Credit.
The Graduate Research Seminar in the Department of Materials Science and Engineering provides a forum for students to present their latest research results in a formal seminar setting. The course encourages discussion between students in varying disciplines in order to establish new collaborations and develop the shared vocabulary required for interdisciplinary materials science research. Permission Required.
Instructor(s): J. Erlebacher.

EN.510.802. Materials Research Seminar. 1.0 Credit.
Instructor(s): J. Erlebacher.

EN.510.803. Materials Science Seminar. 1.0 Credit.
The Materials Science Seminar exposes students to a wide array of internationally recognized speakers who discuss topics of cutting-edge Materials Science research. Speakers are selected both to overlap research interests within the department and to expose students to broader trends in contemporary Materials Science.
Instructor(s): J. Erlebacher.

EN.510.804. Materials Science Seminar. 1.0 Credit.
Meets with EN.510.434, EN.510.439, EN.510.441, EN.510.446, and EN.510.448.
Instructor(s): J. Erlebacher.

EN.510.807. Graduate Research In Materials Science. 3.0 - 20.0 Credits.
Individual programs of study are worked out between students and the professor supervising their independent study project. Topics selected are those not formally listed as regular courses and include a considerable design component.
Instructor(s): J. Erlebacher.

EN.510.808. Graduate Research. 3.0 - 20.0 Credits.
Instructor(s): J. Erlebacher.

Cross Listed Courses

Physics Astronomy
AS.171.321. Introduction to Space, Science, and Technology. 3.0 Credits.
Topics include space astronomy, remote observing of the earth, space physics, planetary exploration, human space flight, space environment, orbits, propulsion, spacecraft design, attitude control and communication. Crosslisted by Departments of Earth and Planetary Sciences, Materials Science and Engineering and Mechanical Engineering. Recommended Course Background: AS.171.101-AS.171.102 or similar; AS.110.108-AS.110.109.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): J. MacKenty; S. McCandless
Area: Engineering, Natural Sciences.

General Engineering
EN.500.112. Gateway Computing. 3.0 Credits.
This course introduces fundamental programming concepts and techniques, and is intended for all who plan to develop computational artifacts or intelligently deploy computational tools in their studies and careers. Topics covered include the design and implementation of algorithms using variables, control structures, arrays, functions, files, testing, debugging, and structured program design. Elements of object-oriented programming, algorithmic efficiency and data visualization are also introduced. Students deploy programming to develop working solutions that address problems in engineering, science and other areas of contemporary interest that vary from section to section. Course homework involves significant programming. Attendance and participation in class sessions are expected.
Instructor(s): I. Sekyonda; J. Selinski; M. Darvish Darab
Area: Engineering, Natural Sciences.

Electrical Computer Engineering
EN.520.627. Photovoltaics and Energy Devices. 3.0 Credits.
This course provides an introduction to the science of photovoltaics and related energy devices. Topics covered include basic concepts in semiconductor device operation and carrier statistics; recombination mechanisms; p-n junctions; silicon, thin film, and third generation photovoltaic technologies; light trapping; and detailed balance limits of efficiency. Additionally, thermophotovoltaics and electrical energy storage technologies are introduced. A background in semiconductor device physics (EN.520.485, or similar) is recommended.
Instructor(s): S. Thon.

Institute for NanoBio Technology
EN.670.619. Fundamental Physics and Chemistry of Nanomaterials. 3.0 Credits.
This course will cover the physics and chemistry relevant to the design, synthesis, and characterization of nanoparticles. Topics include nanoparticle synthesis, functionalization, surface engineering, and applications in diagnostics and therapeutics. The properties of semiconductor quantum dots and magnetic nanoparticles will be reviewed along with techniques for nanoparticle manipulation, particle tracking, and bio-micro rheology. Patterning tools including soft lithography, optical lithography, e-beam lithography, and template lithography will be discussed. Electron and scanning probe microscopy will be reviewed. Cross-listed with Materials Science & Engineering and Chemical & Biomolecular Engineering.
Instructor(s): Staff.

Mechanical Engineering

http://me.jhu.edu

The Department of Mechanical Engineering offers undergraduate and graduate programs of instruction and research. Undergraduate programs are offered in Mechanical Engineering and in Engineering Mechanics. The B.S. in the Mechanical Engineering and Engineering Mechanics degree programs are accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The department offers undergraduate tracks in biomechanical engineering and aerospace engineering. Graduate programs are offered leading to the M.S.E. and the Ph.D. degrees. A five-year accelerated B.S./M.S.E. program is also available.

Mechanical Engineering is of great importance in most contemporary technologies. Examples include aerospace, power generation and conversion, fluid machinery, design and construction of mechanical systems, transportation, manufacturing, production, and biomechanics. This wide range of applications is reflected in the four main stems of the
undergraduate curriculum: thermal and fluid systems, mechanics and materials, robotics and control systems, and biomechanics.

Engineering Mechanics is a more flexible program that enables students to pursue particular interests while centering on a smaller core of courses. Students may use this flexibility to follow specific interests in physics, mathematics, economics, biology, and other disciplines while receiving an engineering degree.

Design is a major component of both undergraduate programs. In the two-semester Engineering Design Project course taken by undergraduates during their senior year, students work in small teams to design, construct, and test a mechanical device or system for an industrial sponsor.

A major effort of the department is directed toward the creation of a stimulating intellectual environment in which both undergraduate and graduate students can develop to their maximum potential. Faculty members encourage undergraduate students to participate in both fundamental and applied research along with the graduate students. In most junior and senior undergraduate classes, and in graduate classes, small enrollments permit close contact with faculty members. Students have excellent opportunities to participate actively in the classroom and laboratories and to follow special interests within a subject area.

Facilities
The Mechanical Engineering department office is located in 223 Latrobe Hall. The teaching and research facilities of the department are located in Latrobe, Clark, Krieger, Wyman, Maryland, Malone, and Hackerman Halls.

The thermal-fluids teaching laboratory in Krieger Hall supports courses in Thermodynamics, Fluid Mechanics, and Heat Transfer. The undergraduate laboratories at the Wyman Park Building support courses in Design and CAD, Electronics and Instrumentation, Mechanics-Based Design, Robot Sensors and Actuators, Mechatronics, and Dynamical Systems. The Senior Design laboratories are used by seniors to construct and test their prototypes in the yearlong design project course.

The many research laboratories within Mechanical Engineering support a variety of focus areas including: turbulence, oceanographic fluid dynamics, turbomachinery, microfluidics, locomotion (sea, land, and air), mechanisms of deformation and damage, impact dynamics, additive manufacturing, polymer mechanics, mechanics of soft tissues, biophotonics, cellular mechanics, bioMEMS, robot and protein kinematics, haptics, medical robots, underwater robots, and autonomous vehicles.

Financial Aid
Scholarships and other forms of financial assistance for undergraduates are described under Admissions and Finances (p. 6). In addition, selected undergraduates may be employed as laboratory assistants on research projects. Assistance in various forms is available for graduate students, including tuition fellowships, fellowships with stipend, research assistantships, and competitively-awarded hourly teaching assistant positions. Applications for graduate study must be received by October 15 for the Spring semester and December 15 for the Fall semester for consideration.

Research assistantships support graduate students who work with professors on their research contracts and grants.

Undergraduate Programs
The Department of Mechanical Engineering offers two undergraduate programs: the Bachelor of Science in Mechanical Engineering and the Bachelor of Science in Engineering Mechanics. Both programs are accredited by the Engineering Accreditation Commission of ABET. The department offers tracks in biomechanical engineering and aerospace engineering. For additional information regarding both the mechanical engineering and engineering mechanics academic programs, please consult the undergraduate advising manuals which are available on the departmental website (http://me.jhu.edu/undergraduate-studies/academic-advising-undergraduate).

For details and an explanation of ABET requirements, visit www.abet.org.

Requirements for the Bachelor’s Degree
See also General Requirements for Departmental Majors (p. 7) and the department's undergraduate advising manuals (http://me.jhu.edu/undergraduate-studies/academic-advising-undergraduate).

The Mechanical Engineering Program
The mission of the B.S. in mechanical engineering degree program is to provide a rigorous educational experience that prepares a select group of students for leadership positions in the profession and a lifetime of learning. The faculty is committed to maintaining a modern and flexible curriculum which, building on a foundation of basic sciences and mathematics, develops a solid education in the mechanical engineering sciences. The aim of the Mechanical Engineering program is to build competence in the design and development of thermal, fluid, and mechanical systems, to promote a broad knowledge of the contemporary social and economic context, and to develop the communication skills necessary to excel.

The program provides a basic background in thermal and mechanical systems. Laboratory instruction, as well as the senior design project, gives the student hands-on experience. Each student's program of study is planned in consultation with his or her faculty advisor. Students are encouraged to develop depth in one or two areas of focus within mechanical engineering chosen from fluid mechanics, mechanics of solids and design, heat transfer and energy, robotics, and biomechanics. The choice of focus is decided in the junior year after consultation with the student's faculty advisor.

Our primary objective is to educate an exceptional group of engineers who, after graduation, will be:

- ...successful and on track to become leaders among their peers in industry, government laboratories and other organizations, and
- ...advanced students in the best graduate programs.

Students graduating with a B.S. in Mechanical Engineering will have demonstrated:

(a) ...an ability to apply knowledge of mathematics, science and engineering

(b) ...an ability to design and conduct experiments, as well as to analyze and interpret data

(c) ...an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
The Mechanical Engineering Curriculum is Structured as Follows

### Mathematics (19 credits)

(Grades below C- not accepted)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
</tbody>
</table>

Statistics Elective at 300-level or above:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.560.348</td>
<td>Probability &amp; Statistics in Civil Engineering</td>
<td>3-4</td>
</tr>
<tr>
<td>or EN.553.31</td>
<td>Probability &amp; Statistics</td>
<td></td>
</tr>
</tbody>
</table>

Other qualified statistics courses can be taken upon advisor’s approval.

### Science (12 Credits)

(Grades below C- are not accepted)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.123</td>
<td>Introduction to Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.124</td>
<td>Intro to Mechanics II</td>
<td>2</td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>or AS.171.108</td>
<td>General Physics for Physical Science Majors (AL)</td>
<td>1</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td></td>
</tr>
</tbody>
</table>

### Humanities (18 credits)

Six humanities and/or social science electives, of which one must specifically teach writing (either AS.220.105, AS.060.100, AS.060.113 or AS.060.114). See the Distribution tab in the Requirements for a Bachelor’s Degree section for two exceptions to the rule that each H/S distribution course be at least 3 credits. Visit http://e-catalog.jhu.edu/undergrad-students/academic-policies/requirements-for-a-bachelors-degree/ for information.

### Required Engineering Courses (50 credits)

(Grades below C- are not accepted)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.107</td>
<td>MechE Undergraduate Seminar I</td>
<td>0.5</td>
</tr>
<tr>
<td>EN.530.108</td>
<td>MechE Undergraduate Seminar II</td>
<td>0.5</td>
</tr>
<tr>
<td>EN.530.111</td>
<td>Intro to MechE Design and CAD</td>
<td>2</td>
</tr>
<tr>
<td>EN.530.115</td>
<td>MechE Freshman Lab I</td>
<td>1</td>
</tr>
<tr>
<td>EN.500.112</td>
<td>Gateway Computing (AP Computer Science credit not accepted)</td>
<td>3</td>
</tr>
<tr>
<td>EN.560.201</td>
<td>Statics &amp; Mechanics of Materials</td>
<td>4</td>
</tr>
<tr>
<td>EN.530.202</td>
<td>Mechanical Engineering Dynamics</td>
<td>4</td>
</tr>
<tr>
<td>EN.530.212</td>
<td>MechE Dynamics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.215</td>
<td>Mechanics-Based Design</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.216</td>
<td>Mechanics Based Design Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.231</td>
<td>Mechanical Engineering Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.232</td>
<td>Mechanical Engineering Thermodynamics</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.241</td>
<td>Electronics &amp; Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>EN.520.230</td>
<td>Mastering Electronics</td>
<td></td>
</tr>
</tbody>
</table>

**EN.520.230 is the alternate effective Fall 2017.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.237</td>
<td>Introduction to Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.239</td>
<td>Introduction to Fluid Mechanics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.334</td>
<td>Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.335</td>
<td>Heat Transfer Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.343</td>
<td>Design and Analysis of Dynamical Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.344</td>
<td>Design and Analysis of Dynamical Systems</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.352</td>
<td>Materials Selection</td>
<td>4</td>
</tr>
<tr>
<td>EN.660.361</td>
<td>Engineering Business and Management</td>
<td>3</td>
</tr>
</tbody>
</table>

### Capstone Design (8 credits)

(Grades below C- are not accepted)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.403</td>
<td>MechE Senior Design Project I</td>
<td>8</td>
</tr>
<tr>
<td>&amp; EN.530.404</td>
<td>MechE Senior Design Project II</td>
<td></td>
</tr>
</tbody>
</table>

### Mechanical Engineering Electives (9 credits)

(Grades below C- are not accepted)

Three courses (300-level or higher) in mechanical engineering

### Technical Electives (9 credits)

(Grades below C- are not accepted)

Three engineering, quantitative studies, or natural sciences courses at or above the 300-level, chosen from any combination of courses in engineering, basic sciences, or mathematics selected in consultation with the student’s advisor.

**To obtain coherence and depth in these humanities and social science electives, at least six credits must be at the 300-level or higher. While a course grade of C- or higher is preferred, up to 10 credits with a D or D+ grade will be accepted. For examples of areas of concentration and more details, see the undergraduate academic advising manual at http://www.me.jhu.edu/advising.html.

** These courses are intended to complement the mechanical engineering electives. One of the three technical electives may be a computer language course taken at any level.

A program of not less than 125 credits must be completed to be eligible for the bachelor’s degree. All undergraduate students must follow a program approved by a faculty member in the department who is selected as the student’s advisor.

### Aerospace Track

A student may specialize in aerospace engineering once a solid background in the fundamentals of mechanical engineering has been developed through the basic Mechanical Engineering courses. This track requires knowledge and background in several fields including advanced dynamics, flight mechanics, propulsion, aerospace materials and structures, signal processing, control systems, astrophysics and space systems. Students pursuing the Aerospace Engineering Track...
are required to take at least five of the following courses (which can
be counted toward the Mechanical Engineering elective and Technical
Elective requirements in the general Mechanical Engineering program):

Any five of the courses listed below are required. A sixth course from
this list, though not required is highly recommended.

EN.530.328 Fluid Mechanics II 3
EN.530.418 Aerospace Structures & Materials 3
or EN.530.619 Aerospace Structures and Materials
EN.530.424 Dynamics of Robots and Spacecraft 3
or EN.530.624 Dynamics of Robots and Spacecraft (Graduate)
EN.530.425 Mechanics of Flight 3
EN.530.427 Intermediate Fluid Mechanics 3
EN.530.432 Jet & Rocket Propulsion 3
EN.530.435 Guidance and Control of Flight Vehicles 3
EN.530.470 Space Vehicle Dynamics & Control 3
AS.171.321 Introduction to Space, Science, and Technology 3
AS.270.318 Remote Sensing of the Environment 3
Other courses relevant to the track which don’t count toward the
requirements include:

AS.171.118 Stars and the Universe: Cosmic Evolution 3

**Biomechanics Track**

A student may specialize in biomechanics once a solid background in the
fundamentals of mechanical engineering has been developed through
the core Mechanical Engineering or Engineering Mechanics courses.
The essence of mechanics is the interplay between forces and motion.
In biology, mechanics is important at the macroscopic, cellular, and
subcellular levels.

At the macroscopic length scale biomechanics of both soft and hard
tissues plays an important role in computer-integrated surgical systems
and technologies, e.g., medical robotics. At the cellular level, issues
such as cell motility and chemotaxis can be modeled as mechanical
phenomena. At the subcellular level, conformational transitions in
biological macromolecules can be modeled using molecular dynamics
simulation, which is nothing more than computational Newtonian
mechanics; statistical mechanics, or using coarse-grained techniques
that rely on principles from the mechanics of materials.

In addition, much of structural biology can be viewed from the
perspective of Kinematics, e.g., finding spatial relationships in data from
the Protein Data Bank.

Each student who pursues the Biomechanics track will, in consultation
with his or her academic advisor, choose the set of technical and
mechanical engineering course electives that best matches the student’s
interests. Upon completion of the track, notification of this achievement
is placed on the student’s academic record and transcript.

A student may specialize in biomechanics once a solid background in the
fundamentals of mechanical engineering has been developed through
the basic courses. Students pursuing the biomechanics concentration within
mechanical engineering are required to take at least four of the following
courses. Two among the four should be chosen from the biomechanics-
oriented courses, indicated by an asterisk (*).

EN.510.435 Mechanical Properties of Biomaterials 3
EN.530.410 Biomechanics of the Cell * 3
EN.530.426 Biofluid Mechanics * 3
EN.530.436 Bioinspired Science and Technology 3
EN.530.441 Introduction to Biophotonics 3
EN.530.445 Introduction to Biomechanics * 3
EN.530.446 Experimental Methods in Biomechanics * 3
EN.530.448 Biosolid Mechanics * 3
EN.530.473 Molecular Spectroscopy and Imaging 3
EN.530.485 Physics and Feedback in Living Systems 3
EN.530.486 Mechanics of Locomotion 3
EN.530.495 Microfabrication Laboratory 4
EN.530.672 Biosensing & BioMEMS * 3
EN.540.405/605 The Design of Biomolecular Systems 3
EN.540.440 Micro/Nanotechnology: The Science and
Engineering of Small Structures 3
EN.580.221 Molecules and Cells x 4
EN.580.421 Systems Bioengineering I xx 4
EN.580.422 Systems Bioengineering II xx 4
EN.580.423 Systems Bioengineering Lab I xx 2
EN.580.424 Systems Bioengineering Lab xx 2
EN.580.451 Cell and Tissue Engineering Lab 3
EN.580.452 Cell and Tissue Engineering Lab 3
EN.580.456 Introduction to Rehabilitation Engineering 3

x  Prerequisite: AS.030.101 Introductory Chemistry I
xx  Prerequisite: EN.580.221 Molecules and Cells, EN.580.222 Systems
     and Controls, and AS.110.302 Differential Equations and Applications

Students may not use the satisfactory/unsatisfactory option for required
courses, including Humanities and Social Studies. Exceptions can
be considered and approved by their faculty advisors. Further, the
Department of Mechanical Engineering requires that grades of C- or
better be obtained in all required engineering, mathematics, and science
courses (i.e. grades of D, D+ or F will not be accepted). The department
will accept D or D+ grades only up to a maximum of 10 credits for
Humanities and Social Sciences courses.

**Sample Program**

**First Year**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108 Calculus I</td>
<td>4</td>
<td>AS.110.109 Calculus II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(For Physical Sciences</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and Engineering)</td>
<td></td>
</tr>
<tr>
<td>AS.030.101 Introductory Chemistry I</td>
<td>3</td>
<td>Humanities/Social Sciences Elective</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.107 MechE Undergraduate Seminar I</td>
<td>0.5</td>
<td>EN.530.108 MechE Undergraduate Seminar II</td>
<td>0.5</td>
</tr>
<tr>
<td>EN.530.111 Intro to MechE Design and CAD</td>
<td>2</td>
<td>EN.530.124 Intro to Mechanics II</td>
<td>2</td>
</tr>
<tr>
<td>EN.530.115 MechE Freshman Lab I</td>
<td>1</td>
<td>Humanities/Social Sciences Elective</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.123 Introduction to Mechanics I</td>
<td>3</td>
<td>EN.500.112 Gateway Computing</td>
<td>3</td>
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</tbody>
</table>
### Second Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.202 Calculus III</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EN.560.201 Statics Mechanics of Materials</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.231 Mechanical Engineering Thermodynamics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EN.530.232 Mechanical Engineering Thermodynamics: Laboratory</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AS.171.102 General Physics: Physical Science Major II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AS.173.112 General Physics Laboratory II</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Third Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.254 Manufacturing Engineering</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.327 Introduction to Fluid Mechanics</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.329 Introduction to Fluid Mechanics</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>EN.530.352 Materials Selection</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Statistics Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Technical Elective</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

#### Fourth Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.403 MechE Senior Design Project I</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>EN.660.461 Engineering Business and Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Technical Elective</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

| Humanities/Social Sciences Elective         | 3 Technical Elective | 3 |
| Humanities/Social Sciences Elective         | 3 Humanities/Social Sciences Elective | 3 |

Total Credits: 126

### The Engineering Mechanics Program

The mission of the B.S. in engineering mechanics degree program is to provide a rigorous educational experience that prepares a select group of students for leadership positions in the profession and a lifetime of learning. The faculty is committed to maintaining a modern and flexible curriculum which, building on a foundation of basic sciences and mathematics, develops a solid education in the mechanical engineering sciences. The aim of the Engineering Mechanics program is to build competence in the analysis, design, and modeling of fluid and solid systems, to promote a broad knowledge of the contemporary social and economic context, and to develop the communication skills necessary to excel.

The educational objectives for the B.S. in engineering mechanics degree are designed to educate a select group of science-oriented engineers who, after graduation, will be successful and on track to become leaders among their peers:

- ...in the best graduate programs in engineering, science, medical schools, or law schools, and
- ...in industry, government laboratories, and other organizations.

Students graduating with a B.S. in Mechanical Engineering will have demonstrated:

(a) ...an ability to apply knowledge of mathematics, science and engineering
(b) ...an ability to design and conduct experiments, as well as to analyze and interpret data
(c) ...an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
(d) ...an ability to function on multidisciplinary teams
(e) ...an ability to identify, formulate, and solve engineering problems
(f) ...an understanding of professional and ethical responsibility
(g) ...an ability to communicate effectively
(h) ...the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
(i) ...a recognition of the need for and an ability to engage in life-long learning
(j) ...a knowledge of contemporary issues
(k) ...an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The curriculum is intended to enable graduates to explore fundamental questions in many fields of engineering. Emphasis is placed on the basic
This program provides a strong foundation for graduate work in a wide range of disciplines. All mathematics elective and technical elective courses must be at the 300-level or higher, unless approved by their faculty advisor.

**Mathematics (23 credits)**

(grades below C- not accepted)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>or AS.110.212</td>
<td>Honors Linear Algebra</td>
<td></td>
</tr>
</tbody>
</table>

Mathematics elective: 4 credits

Statistics Elective at 300-level or above: 3-4 credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.560.348</td>
<td>Probability &amp; Statistics in Civil Engineering</td>
<td></td>
</tr>
<tr>
<td>or EN.553.31</td>
<td>Probability &amp; Statistics</td>
<td></td>
</tr>
</tbody>
</table>

Other qualified statistics courses can be taken upon advisor's approval.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.212</td>
<td>Honors Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or AS.110.201</td>
<td>Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>&amp; AS.110.302</td>
<td>and Differential Equations and Applications</td>
<td></td>
</tr>
</tbody>
</table>

**Basic Science (16-17 credits)**

(Grades below C- not accepted)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>AS.171.102</td>
<td>General Physics: Physical Science Major II</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.112</td>
<td>General Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.123</td>
<td>Introduction to Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.124</td>
<td>Intro to Mechanics II</td>
<td>2</td>
</tr>
</tbody>
</table>

Another basic science elective: 4 credits

**Humanities (18 credits)**

Six humanities and/or social science electives, of which one must specifically teach writing (either AS.220.105, AS.060.100, AS.060.113 or AS.060.114). See the Distribution tab in the Requirements for a Bachelor's Degree section for two exceptions to the rule that each H/S distribution course be at least 3 credits. Visit http://e-catalog.jhu.edu/undergrad-students/academic-policies/requirements-for-a-bachelors-degree/ for information.

**Introductory Engineering and Computing**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.107</td>
<td>MechE Undergraduate Seminar I</td>
<td>0.5</td>
</tr>
<tr>
<td>EN.530.108</td>
<td>MechE Undergraduate Seminar II</td>
<td>0.5</td>
</tr>
<tr>
<td>EN.500.112</td>
<td>Gateway Computing</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.111</td>
<td>Intro to MechE Design and CAD</td>
<td>2</td>
</tr>
<tr>
<td>EN.530.115</td>
<td>MechE Freshman Lab I</td>
<td>1</td>
</tr>
</tbody>
</table>

Alternate introductory courses are available. If EN.530.107/108, EN.530.111, EN.530.115, and EN.530.123/124 are not taken, students must take one course from the engineering course lists below:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.500.101</td>
<td>What Is Engineering?</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.137</td>
<td>Introduction To Electrical &amp; Computer Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.108</td>
<td>Introduction Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.202</td>
<td>Bme In The Real World</td>
<td>1</td>
</tr>
</tbody>
</table>

Other Required Engineering Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.560.201</td>
<td>Statics &amp; Mechanics of Materials</td>
<td>4</td>
</tr>
<tr>
<td>EN.530.202</td>
<td>Mechanical Engineering Dynamics</td>
<td>4</td>
</tr>
<tr>
<td>EN.530.212</td>
<td>MechE Dynamics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.215</td>
<td>Mechanics-Based Design</td>
<td>3</td>
</tr>
<tr>
<td>or EN.530.405</td>
<td>Mechanics of Advanced Engineering Structures</td>
<td></td>
</tr>
<tr>
<td>EN.530.216</td>
<td>Mechanics Based Design Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.231</td>
<td>Mechanical Engineering Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.232</td>
<td>Mechanical Engineering Thermodynamics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EN.530.327</td>
<td>Introduction to Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.329</td>
<td>Introduction to Fluid Mechanics Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

**Capstone Design (8 credits)**

(Grades below C- are not accepted)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.403</td>
<td>MechE Senior Design Project I</td>
<td>8</td>
</tr>
<tr>
<td>&amp; EN.530.404</td>
<td>MechE Senior Design Project II</td>
<td></td>
</tr>
</tbody>
</table>

**Engineering Science Electives (12 credits)**

(Grades below C- are not accepted)

One course in the mechanics of solids (see below)

One course in the mechanics of fluids (see below)

One additional course in the mechanics of either solids or fluids (see below)

One course in either materials or dynamics (see below)

**Engineering Mechanics Electives (3 credits)**

(Grades below C- are not accepted)

One additional elective course in the same area of engineering mechanics (solid mechanics, fluid mechanics, or dynamics, see below).

**Technical Electives (minimum of 18 credits)**

(Grades below C- are not accepted)

Engineering, Quantitative Studies, or Natural Science courses at or above the 300-level, chosen in consultation with the student's advisor from any combination of courses in engineering, basic sciences, or mathematics.

* One must specifically teach writing (either AS.060.100 Introduction to Expository Writing, or AS.060.113 Expository Writing or AS.060.114 Expository Writing, or AS.220.105 Fiction/Poetry Writing I). To obtain coherence and depth in these humanities and social science electives, at least six credits must be at the 300-level or higher.

**Required Engineering Courses (minimum of 26 credits; grades below C- are not accepted)**

**++** Appropriate choices from the social sciences and philosophy may be also used to fulfill this requirement. Because of the importance of computer languages in modern technical society, students may take computer language courses at any level.
**Biomechanics Track**

Engineering Mechanics (EM) is a highly flexible program offered by the Department of Mechanical Engineering, which is ideal for students who want to specialize in any area of mechanics, including biomechanics. The essence of mechanics is the interplay between forces and motion.

In biology, mechanics is important at the macroscopic, cellular, and subcellular levels. At the macroscopic length scale biomechanics of both soft and hard tissues plays an important role in computer-integrated surgical systems and technologies (e.g., medical robotics). At the cellular level, issues such as cell motility and chemotaxis can be modeled as mechanical phenomena. At the subcellular level, conformational transitions in biological macromolecules can be modeled using molecular dynamics simulation (which is nothing more than computational Newtonian mechanics), statistical mechanics, or using coarse-grained techniques that rely on principles from the mechanics of materials. In addition, much of structural biology can be viewed from the perspective of Kinematics (e.g., finding spatial relationships in data from the Protein Data Bank).

Each student who pursues the biomechanics track within the EM major will, in consultation with his or her EM advisor, choose the set of technical and EM electives that best matches the student's interests. Many electives from other departments are acceptable. The electives for the EM major are structured as follows:

### Engineering Science Electives (12 credits)
One course in solid mechanics
One course in fluid mechanics
One additional course in mechanics of either solids or fluids
One course in either materials or dynamics

### Engineering Mechanics Electives (6 credits)
Two additional courses in the same area of mechanics (i.e., fluids, solids, or dynamics)

### Technical Electives (18 credits)
Chosen from 300-level courses in engineering and the sciences in consultation with the student’s faculty advisor. One course can be either EN.601.107 Intro to Java, EN.601.220 Intermediate Programming or EN.601.226 Data Structures

Examples of bio-oriented courses which can be applied to the above three categories include (but are not limited to):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.328</td>
<td>Fluid Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.425</td>
<td>Mechanics of Flight</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.426</td>
<td>Biofluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.427</td>
<td>Intermediate Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>EN.570.301</td>
<td>Environmental Engineering Fundamentals I</td>
<td>3</td>
</tr>
</tbody>
</table>

### Mechanics of Materials courses may be chosen from courses such as:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.215</td>
<td>Mechanics-Based Design</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.405</td>
<td>Mechanics of Advanced Engineering Structures</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.414</td>
<td>Computer-Aided Design</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.430</td>
<td>Applied Finite Element Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.448</td>
<td>Biosolid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>EN.560.320</td>
<td>Structural Design I</td>
<td>3</td>
</tr>
<tr>
<td>EN.560.330</td>
<td>Foundation Design</td>
<td>3</td>
</tr>
<tr>
<td>EN.560.730</td>
<td>Finite Element Methods</td>
<td>3</td>
</tr>
</tbody>
</table>

Students may not use the satisfactory/unsatisfactory option for required courses, including Humanities and Social Sciences, unless approved by their faculty advisor. The department will accept D or D+ grades only up to a maximum of 10 Humanities and Social Science credits. All undergraduate students must follow a program approved by a faculty member in the department who is selected as the student’s advisor.

<table>
<thead>
<tr>
<th>Sample Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
</tr>
<tr>
<td>AS.110.108</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>AS.030.101</td>
</tr>
<tr>
<td>EN.530.107</td>
</tr>
<tr>
<td>EN.530.111</td>
</tr>
<tr>
<td>EN.530.115</td>
</tr>
<tr>
<td>EN.530.123</td>
</tr>
</tbody>
</table>

**Second Year**

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.202 Calculus III</td>
<td>4 EN.530.202 Mechanical Engineering Dynamics</td>
</tr>
<tr>
<td>AS.171.102 General Physics: Physical Science Major II</td>
<td>4 EN.530.212 MechE Dynamics Laboratory</td>
</tr>
<tr>
<td>AS.173.112 General Physics Laboratory II</td>
<td>1 EN.530.215 Mechanics-Based Design</td>
</tr>
<tr>
<td>EN.560.201 Statics Mechanics of Materials</td>
<td>4 EN.530.216 Mechanics Based Design Laboratory</td>
</tr>
<tr>
<td>EN.530.231 Mechanical Engineering Thermodynamics</td>
<td>3 EN.553.291 Linear Algebra and Differential Equations</td>
</tr>
<tr>
<td>EN.530.232 Mechanical Engineering Thermodynamics Laboratory</td>
<td>1 Technical Elective (1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fall Credits</th>
<th>Spring Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.327 Introduction to Fluid Mechanics</td>
<td>3 Engineering Science elective (fluids)</td>
</tr>
<tr>
<td>EN.530.329 Introduction to Fluid Mechanics Laboratory</td>
<td>1 Engineering Science elective (solids/fluids)</td>
</tr>
<tr>
<td>Technical Elective (2)</td>
<td>3 Technical Elective</td>
</tr>
<tr>
<td>Humanities/Social Sciences Elective (3)</td>
<td>3 Mathematics Elective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Credits</td>
</tr>
<tr>
<td>EN.530.403 MechE Senior Design Project I</td>
</tr>
<tr>
<td>Engineering Mechanics elective (solids, fluids, dynamics)</td>
</tr>
<tr>
<td>Engineering Science elective (materials/dynamics)</td>
</tr>
<tr>
<td>Engineering Mechanics elective (solids, fluids, dynamics)</td>
</tr>
<tr>
<td>Humanities/Social Sciences Elective (5)</td>
</tr>
</tbody>
</table>

| Total Credits: 129 |

**The Combined Five-Year Bachelor’s / Master’s Program**

The Mechanical Engineering Department offers a concurrent five-year bachelor’s/master’s program for mechanical engineering and engineering mechanics majors. Applications to the B.S./M.S.E. program should be submitted by January 6 for consideration of spring admission and June 16 for possible fall admission, during applicant’s junior (third) year.

To apply for admission, students must submit an application, plus a statement of purpose, college transcript, and three letters of recommendation, two of which should be from Mechanical Engineering faculty.

Upon acceptance into the program, students will be asked to develop an outline of their proposed academic program with their advisor.

**Graduate Programs**

**Admissions and Advising**

To be admitted to graduate study in the Department of Mechanical Engineering, applicants must submit credentials sufficient to convince the faculty that they will thrive in a program of advanced course work and/or research. Graduate Record Examination scores must be submitted.

Upon arrival, each graduate student is assigned to a faculty advisor to help map a tentative program for the first year and enter the intellectual life of the department. The student will remain in regular communication with the advisor. The advisor may use a variety of methods to assess the student’s progress, sometimes including special oral or written examinations. It is not necessary that a student have the same advisor in successive years. After serious research for a dissertation has begun, the research supervisor will automatically function as advisor. All Ph.D. students are required, and master’s students are encouraged, to attend the weekly Mechanical Engineering Graduate Seminars.

**Requirements for the M.S.E. Degree**

*Essay Option: For the Master of Science in Engineering degree at least eight one-semester courses are required. At least half of them must be*
selected among those listed as graduate courses in this catalog. The remaining courses can be chosen from 400-level courses in this catalog, with the advisor's approval. 50% of all substantive courses must be offered by Mechanical Engineering (EN.530.xxx), including at least two courses at the .600-level or .700-level. A completed piece of original research conducted under the guidance of a full-time faculty member of the department and reported as a master's thesis is required. All students must follow a course of study approved by their individual advisor.

Non-Essay Option: The student must successfully complete a coordinated sequence of ten courses, which requires one year of full-time resident graduate study. At least six of the ten courses must be selected among the graduate courses of this catalog. 50% of all substantive courses must be offered by Mechanical Engineering (EN.530.xxx), including at least two courses at the .600-level or .700-level. The intent of this program is to provide the student with an intensive exposure to fundamental and advanced topics within mechanical engineering and engineering mechanics. Students must follow a course of study approved by their individual advisor.

Details on grade requirements and other departmental academic policy for the M.S.E. degree can be found on the Mechanical Engineering Graduate Advising page at http://me.jhu.edu/graduate-studies/ academic-advising-graduate/.

Requirements for the Ph.D. Degree

As soon as the student is prepared to do so, he/she should fulfill the requirements for candidacy. In addition to general university requirements, the student must pass two exams. The first is an oral Departmental Qualifying Exam based on core courses. This exam is usually taken after the third semester. The second is a preliminary Graduate Board Oral Examination satisfying the Graduate Board requirements. This is a comprehensive examination in which students must demonstrate proficiency at the graduate level in their field of specialization.

Although there are no formal course requirements, students are presumed to be prepared by studies equal to six 600-level courses in their field of specialization and six courses in related fields. All candidates for the doctorate must complete two semesters as a teaching assistant as part of their training. All students are required to follow a course of study approved by their individual advisor.

The final and principal requirement for the doctorate is a piece of original research worthy of publication. Candidates must write a dissertation describing their work in detail and successfully defend it in a final oral presentation and examination.

Additional details on Ph.D. requirements and departmental academic policy for the Ph.D. degree can be found on the Mechanical Engineering Graduate Advising page at http://me.jhu.edu/graduate-studies/ academic-advising-graduate/.

For current faculty and contact information go to http://www.me.jhu.edu/ faculty.html

Faculty

Department Head

Gretar Tryggvason

Chair: multiphase and free surface flows, phase changes including boiling and solidification, vortex flows and combustion, numerical methods

Full Time Professors

Ishan Barman

Assistant Professor: elucidation of morphological and chemical information of different patho-physiological states through an interdisciplinary approach featuring novel optical, spectroscopic and microfluidic measurements, mechanistic modeling and advanced numerical methods for analysis and interpretation of the acquired data.

Jeremy Brown

Assistant Professor: haptic feedback, upper-limb prosthetics, surgical robotics, rehabilitation robotics, human-machine interaction.

Yun Chen

Assistant Professor: cell mechanics, biophysical properties of cancer microenvironment, mechanosignaling pathways, drug delivery, bioenergetics in mitochondria.

Gregory S. Chirikjian

Professor: computational structural biology (in particular, computational mechanics of large proteins), conformational statistics of biological macromolecules, developed theory for 'hyper-redundant' (snakelike) robot motion planning, designs and builds hyper-redundant robotic manipulator arms, applied mathematics (applications of group theory in engineering), self-replicating robotic systems.

Noah J. Cowan

Professor: robot dynamics, animal biomechanics, and sensorimotor control; theory and application of control systems and system identification techniques for closed-loop systems (especially biological systems); biological motor control and systems neuromechanics; medical robotics.

Andrew S. Douglas

Professor (Vice Dean for Academic Affairs, Whiting School of Engineering): nonlinear mechanics of solids, mechanical response of compliant biological tissues, finite deformation elasticity, Static and dynamic fracture of ductile materials.

Jaafar El-Awady

Assistant Professor: multiscale materials modeling, damage and fracture mechanisms of materials in mechanical design, material degradation in extreme environments, nano-materials and structures, impact dynamics and wave propagation.

Dennice Gayme

Assistant Professor: Dynamics and control of nonlinear, networked and spatially distributed systems such as the electric power grid, and wind farms. Modeling of turbulence and transition to turbulence in wall bounded shear flows and wind farms. Grid integration of renewable energy sources.

Kevin J. Hemker

Professor, Alonzo G. Decker, Jr. Chair in Mechanical Engineering: Professor Hemker and his students seek to identify the underlying atomic-scale processes that govern the mechanical behavior of advanced material systems. They are making key observations and discoveries that define the way the mechanics and materials community thinks about and understands the properties of nanocrystalline materials, MEMS and micro-lattice materials, thermal barrier coatings, armor ceramics, and high temperature structural materials.

Soojung Claire Hur

ICME faculty: high temperature structural materials, micro-lattice materials, thermal barrier coatings, armor ceramics, and high temperature structural materials.
Assistant Professor: inertial microfluidics, nonlinear fluid dynamics, multiphase flow, cellular biophysics, cell mechanics, single cell manipulations, personalized medicine, regenerative medicine.

Ryan Hurley
Assistant Professor: mechanics of structurally complex materials, granular and geologic materials, multiscale materials modeling, 3D materials characterization, impact and wave propagation.

Sung Hoon Kang
Assistant Professor: Complex behaviors of material systems and structures with novel properties based on inspiration from nature; rational design followed by rapid prototyping using a 3D printer; designing experimental model systems and/or using computational models to identify key design parameters of systems to make desired structures and properties by tailoring behaviors of systems.

Joseph M. Katz
Professor, Whiting School Mechanical Engineering Chaired Professor, Gilman Scholar: cavitation phenomena, attached partial cavitation, cavitation in turbulent shear flows, jets and wakes. Multiphase flows: interaction between bubbles and flow structure, mixing mechanisms and droplet formation in water-fuel stratified shear flows, transport of microscopic particles and droplets in turbulent flows. Development of optical flow diagnostics techniques, including Particle Image Velocimetry (PIV) and Holographic Particle Image Velocimetry (HPIV). Applications of PIV and HPIV for measuring the characteristics of turbulence and addressing turbulence modeling issues. Complex flow structure and turbulence within turbo-machines: Wake-wake and blade-wake interactions in multistage axial turbomachines, flow and rotating stall in centrifugal pumps, development of optical diagnostics techniques for measurements in turbomachines. Oceanography: flow structure and turbulence in the bottom boundary layer of the coastal ocean; measurement of spatial distributions of plankton, particles and bubbles in the ocean; development of optical instrumen-tation, including submersible holo-graphy and PIV systems. Prevention of nozzle wear in abrasive water suspension jets (AWSJ) using porous lubricated nozzles. Flow-induced vibrations and noise, mechanisms of noise generation in turbulent separated flows and in turbomachines.

Marin Kobilarov
Assistant Professor: developing intelligent robotic vehicles that can perceive, navigate, and accomplish challenging tasks in uncertain, dynamic, and highly constrained environments. Performing research in analytical and computational methods for mechanics, control, motion planning, and reasoning under uncertainty, and in the design and integration of novel mechanisms and embedded systems. Application areas include mobile robots, aerial vehicles, and nanosatellites.

Chen Li
Assistant Professor: Terradynamics, locomotion, biomechanics, bio-inspired robotics, physics of living systems

Charles Meneveau
Professor, Louis M. Sardella Chair in Mechanical Engineering, Director of the Center for Environmental and Applied Fluid Mechanics: theoretical, experimental, and numerical studies in turbulence, large-eddy-simulation, turbulence modeling, fractals and scaling in complex systems, small-scale structure of turbulence and velocity gradient dynamics, applications of LES to environmental flows, wind energy, development of data-intensive science tools to study turbulence.

Rajat Mittal
Professor: computational fluid dynamics, low Reynolds number aerodynamics, biomedical flows, active flow control, LES/DNS, immersed boundary methods, fluid dynamics of locomotion (swimming and flying), biomimetics and bioinspired engineering, turbomachinery flows.

K. T. Ramesh
Professor, Alonzo G. Decker, Jr. Professor of Science and Engineering, Director of the Center for Advanced Metallic and Ceramic Systems (CAMCS) and the Hopkins Extreme Materials Institute (HEMI): Nanomaterials, planetary impact, dynamic failure mechanisms, shock, impact, and wave propagation, high-strain-rate behavior of materials, injury biomechanics, constitutive and failure modeling.

Sean Sun
Vice Chair, Professor: mechanobiology of the cell, molecular biomechanics and biophysics, molecular motors and muscle, statistical mechanics and nonlinear phenomena.

Jeff Tza-Huei Wang
Professor: bioMEMS and microfluidics, single molecule manipulation and detection, nano/micro scale fabrication, conformational dynamics of biomolecules.

Louis Whitcomb
Professor: Control Systems: adaptive and model-based control of linear and nonlinear systems, observers, nonlinear systems analysis, with focus on problems arising in mechanical systems, robots, and robotic vehicles. Underwater Robotics: dynamics, control, instrumentation, and navigation of underwater vehicles and inhabited submersibles—with focus on deep submergence oceanographic vehicles. Industrial and Medical Robotics: dynamics, control, instrumentation, and operation of precision robotics for novel medical and industrial applications.

Tamer Zaki
Associate Professor: Transitional and turbulent shear flows: receptivity, linear and non-linear instability waves, secondary instability, breakdown to turbulence, direct numerical simulations, transition modelling. Two-fluid shear flows: linear and non-linear instability methods, interface tracking, the interaction of vortical disturbances with interfaces, direct numerical simulations, laminar-to-turbulence transition. Turbulence: boundary layer turbulence, separation, stratification, drag reduction, turbulence structures, direct numerical simulations, large-scale high-performance computing.

Secondary Faculty Appointments
Stephen Belkoff
Joint, Part-Time, and Research Appointments: Associate Professor (Orthopedic Surgery): biomechanics, orthopaedic implants, fracture fixation in osteoporotic bone, mechanism of injury, vertebralplasty.

Gregory L. Eyink

Lori Graham-Brady
Professor, Civil Engineering: stochastic finite element methods, probabilistic mechanics, stochastic simulation of material properties, micromechanics.

Daniel Naiman
Joint, Part-Time, and Research Appointments: Professor (Applied
Mathematics and Statistics): statistics, computational probability,
bioinformatics.

Mark Robbins
Joint, Part-Time, and Research Appointments: Professor (Physics and
Astronomy): Connecting and contrasting atomistic and macroscopic
descriptions of non-equilibrium processes including friction, adhesion,
large-strain mechanical deformation, fracture, heat flow, fluid flow,
and boundary conditions at interfaces between different materials.
Techniques include molecular simulations, continuum calculations and
multiscale modeling approaches that bridge the two.

Dan Stoianovici
Joint, Part-Time, and Research Appointments: Professor (Brady
Urological Institute): urology, medical robotics.

Russell H. Taylor
Joint, Part-Time, and Research Appointments: Professor (Computer
Science): medical robotics, computer-assisted surgery.

Nitish V. Thakor
Joint, Part-Time, and Research Appointments: Professor (Biomedical
Engineering): medical instrumentation and medical micro and
nanotechnologies, neurological instrumentation, signal processing,
computer applications.

Rene Vidal
Joint, Part-Time, and Research Appointments: Associate Professor
(Biomedical Engineering): biomedical image analysis, computer vision,
machine learning, dynamical systems, signal processing.

Timothy Wehns
Joint, Part-Time, and Research Appointments: Professor (Materials
Science and Engineering), Director of the Center for Leadership
Education: self-propagating exothermic reaction and joining with reactive
multilayer foils, processing and characterization of thin films, layered
materials, and thin film reactions, mechanical testing of metals and
biological materials.

Associate Teaching Professor
David Kraemer
Associate Teaching Professor: Fluid-structure interaction; dynamic
systems; ocean wave energy conversion, engineering pedagogy.

Steven Marra
Associate Teaching Professor: Soft and hard tissue biomechanics,
nonlinear mechanics of solids, mechanics of tissue damage.

Nathan Scott
Associate Teaching Professor: Principles and practice of engineering
design education.

Professor Emeritus
Cila Herman
Professor Emeritus: experimental heat transfer and fluid mechanics,
optical measurement techniques, image processing. Thermoooustic
refrigeration, influence of electric fields on boiling in terrestrial conditions
and microgravity, heat exchangers, heat transfer in boiling, optical
tomography, holographic interferometry, cooling of electronic equipment,
digital image processing, heat transfer augmentation.

William N. Sharpe Jr.

Professor Emeritus: experimental solid mechanics, microelectro-
mechanical systems (MEMS), microsample testing.

Research Scientist
Alan Brandt
Research Scientist, (Applied Physics Laboratory): ocean physics
including internal waves, turbulence, mixing, and bio-physical
interactions. Coastal, estuarine, and environmental fluid dynamics.

Research Professor
Ilene Busch-Vishniac
Research Professor (University of Saskatchewan).

Shiyi Chen
Research Professor (Peking University).

Allison Okamura
Research Professor (Stanford University).

Alexander Spector
Research Professor, Biomedical Engineering: biosolid mechanics,
cell mechanics and biophysics, molecular motors, mathematical and
computational modeling.

Pazhayannur Swaminthan
Research Professor (Applied Physics Laboratory).

Assistant Teaching Professor
Mehran Armand
Assistant Teaching Professor (Applied Physics Laboratory).

Juan I. Arvelo Jr.
Assistant Research Professor (Applied Physics Laboratory).

Iulian Iordachita
Assistant Research Professor: robotics, medical robotics and
instrumentation, mechanisms and mechanical transmissions for robots,
advance electro-mechanical design, biologically-inspired mechanisms.

Jung-Hee Seo
Assistant Research Professor

Lester Su
Assistant Research Professor: (Stanford University).

Liming Voo
Assistant Research Professor (Applied Physics Laboratory).

Associate Research Professor
Nitin Daphalapurkar
Assistant Research Professor.

John Thomas
Assistant Research Professor (Applied Physics Laboratory).

Adjunct Research Professor
Thomas Wright
Adjunct Research Professor: theoretical solid mechanics, wave
propagation, dynamic failure, adiabatic shear localization, instabilities.
Adjunct Professor
William Blake
Adjunct Professor

Adjunct Associate Professors
Luciano Castillo
Adjunct Associate Professor (Texas Tech University)

Thomas Dragone
Adjunct Associate Professor: aerospace structures and materials, airframe structure design and development, materials science.

Ryan Eustice
Adjunct Assistant Professor (Department of Naval Architecture and Marine Engineering, University of Michigan).

Adjunct Assistant Professor
Jian Sheng
Adjunct Assistant Professor (Texas Tech University)

Associate Research Scientist
Tihomir Hristov
Associate Research Scientist.

Assistant Research Scientist
Kourosh Shoelle
Assistant Research Scientist

Adam Sierakowski
Assistant Research Scientist MARCC

Gidong Sim
Assistant Research Scientist

Kelvin Xie
Assistant Research Scientist

Adjunct Research Scientist
David Smallwood
Adjunct Research Scientist

John Smith
Adjunct Principal Research Scientist

Adjunct Associate Research Scientist
Edwin Malkiel
Adjunct Associate Research Scientist.

Lecturers
Soraya Bailey
Lecturer, Senior Design

Yury Ronzhes
Joint, Part-Time, and Research Appointments: Lecturer.

Homewood Professor of Engineering
Andrea Prosperetti
Homewood Professor of Engineering: Multiphase flow; theoretical and computational fluid mechanics and acoustics; gas and vapor bubbles.

For current course information and registration go to https://sis.jhu.edu/classes/

Courses
EN.530.107. MechE Undergraduate Seminar I.
A series of weekly seminars to inform students about careers in mechanical engineering and to discuss technological, social, ethical, legal, and economic issues relevant to the profession. Part 1 of a year-long sequence.
Instructor(s): S. Marra
Area: Engineering.

EN.530.108. MechE Undergraduate Seminar II.
A series of weekly seminars to inform students about careers in mechanical engineering and to discuss technological, social, ethical, legal, and economic issues relevant to the profession. Part 2 of a year-long sequence.
Instructor(s): S. Marra
Area: Engineering.

EN.530.111. Intro to MechE Design and CAD. 2.0 Credits.
This course introduces students to the basic engineering design process and to fundamental concepts and knowledge used in the design of mechanical devices and systems. Students will explore the range of tools utilized in design practice, beginning with the skills of hand-drawing, exploring ways to articulate visual ideas, and concluding with the standards of presentation and CAD tools typical in professional practice.
Corequisites: EN.530.115
Instructor(s): S. Marra
Area: Engineering.

EN.530.112. Intro to MechE Computing. 2.0 Credits.
This course will introduce students to the basics of programming, using the MATLAB environment and applications in mechanical engineering. Topics covered include variables, arithmetic operators, control structures, arrays, functions, recursion, dynamic memory allocation, files, class usage and class writing. Program design and testing are also covered.
Instructor(s): D. Kraemer
Area: Engineering.

EN.530.115. MechE Freshman Lab I. 1.0 Credit.
Hands-on laboratory complementing EN.530.111, including experiments, mechanical dissections, sketching and CAD, and a cornerstone design project. Experiments and mechanical dissections connect physical principles to practical engineering applications. Sketching and CAD work build the students’ design and communication skills. The design project allows students to synthesize a working system by combining knowledge of mechanics and design with practical engineering skills.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): S. Marra
Area: Engineering.

EN.530.116. MechE Freshman Lab II. 1.0 Credit.
Hands-on laboratory in which students continue to develop their engineering design skills. Laboratory topics include engines and motors, microcontrollers, sensors, and applications of MATLAB to mechanical engineering. An interdisciplinary design project allows students to apply their learning and skills while working with fellow students from outside of Mechanical Engineering. Restricted to Mechanical Engineering, Engineering Mechanics, and Undecided Engineering Majors.
Instructor(s): S. Marra
Area: Engineering.
EN.530.123. Introduction to Mechanics I. 3.0 Credits.
This course offers an in-depth study of the fundamental elements of classical mechanics, including particle and rigid body kinematics and kinetics, and work-energy and momentum principles. Part 1 of a year-long sequence.
Instructor(s): J. Thomas
Area: Engineering, Natural Sciences.

EN.530.124. Intro to Mechanics II. 2.0 Credits.
This course offers an in-depth study of the fundamental elements of classical mechanics, statics, mechanics of materials, fluid mechanics, and thermodynamics. Part 2 of a year-long sequence. Restricted to Mechanical Engineering, Engineering Mechanics, Civil Engineering, Undecided Engineering Majors, or permission of instructor.
Instructor(s): S. Belkoff
Area: Engineering, Natural Sciences.

EN.530.150. Engineering Design Graphics, Visualization, and Fundamentals of CAD. 3.0 Credits.
This course will serve as an introduction to the foundational representational techniques for design, and help students to develop design literacy and three-dimensional visualization skills. Students will explore the range of tools utilized in design practice, beginning with the skills of hand-drawing, exploring ways to articulate visual ideas, and concluding with the standards of presentation and CAD tools typical in professional practice. This class will enable students to better develop, express and communicate their ideas as engineers.
Instructor(s): C. Phinney, S. Marra
Area: Engineering.

EN.530.201. Statics and Mechanics of Materials. 4.0 Credits.
Equilibrium of rigid bodies, free-body diagrams, design of trusses. One-dimensional stress and strain, Hooke’s law. Properties of areas. Stress, strain, and deflection of components subjected to uniaxial tension, simple torsion, and bending. Corequisite: EN.560.201. Recommended Course Background: AS.171.101 or EN.530.103 and EN.530.104 or Permission Only.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): R. Sangree
Area: Engineering.

EN.530.202. Mechanical Engineering Dynamics. 4.0 Credits.
Basic principles of classical mechanics applied to the motion of particles, system of particles and rigid bodies. Kinematics, analytical description of motion; rectilinear and curvilinear motions of particles; rigid body motion. Kinetics: force, mass, and acceleration; energy and momentum principles. Introduction to vibration. Includes laboratory experience.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. (EN.530.201 OR EN.560.201) AND (AS.171.101 OR AS.171.107 OR AS.171.105 OR (EN.530.103 OR EN.530.123) AND (EN.530.104 OR EN.530.124)) AND AS.110.109; grade of C- or higher required for EN.530.201 OR EN.560.201
Instructor(s): D. Kraemer; I. Uyanik; S. Bailey; S. Marra
Area: Engineering.

EN.530.212. MechE Dynamics Laboratory. 1.0 Credit.
This is the laboratory component to EN.530.202 MechE Dynamics.
Corequisites: EN.530.202
Instructor(s): S. Belkoff
Area: Engineering.

EN.530.215. Mechanics-Based Design. 3.0 Credits.
Prerequisites: EN.530.201 OR EN.560.201
Instructor(s): A. Douglas; R. Mittal; T. Nguyen
Area: Engineering.

EN.530.216. Mechanics Based Design Laboratory. 1.0 Credit.
This is the laboratory that supports EN.530.215 Mechanics Based Design.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Corequisites: EN.530.215
Instructor(s): S. Marra
Area: Engineering.

EN.530.231. Mechanical Engineering Thermodynamics. 3.0 Credits.
Prerequisites: (AS.171.102 OR AS.171.108); AS.110.109
Corequisites: EN.530.232
Instructor(s): J. Katz
Area: Engineering.

EN.530.232. Mechanical Engineering Thermodynamics Laboratory. 1.0 Credit.
This course is the complementary laboratory course and a required corequisite for EN.530.231. Corequisite: EN.530.231 There will be four lab sessions, days and times TBA.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): S. Marra
Area: Engineering, Natural Sciences.

EN.530.241. Electronics & Instrumentation. 4.0 Credits.
Introduction to basic analog electronics and instrumentation with emphasis on basic electronic devices and techniques relevant to mechanical engineering. Topics include basic circuit analysis, laboratory instruments, discrete components, transistors, filters, op-amps, amplifiers, differential amplifiers, power amplification, power regulators, AC and DC power conversion, system design considerations (noise, precision, accuracy, power, efficiency), and applications to engineering instrumentation.
Prerequisites: AS.171.102 or AS.171.108 or AS.171.106; Students must have completed Lab Safety training prior to registering for this class.; Co or Pre-requisites: EN.550.291 OR (AS.110.201 AND AS.110.302) OR (AS.110.212 AND AS.110.302)
Instructor(s): D. Kraemer
Area: Engineering.
**EN.530.254. Manufacturing Engineering. 3.0 Credits.**
An introduction to the various manufacturing processes used to produce metal and nonmetal components. Topics include casting, forming and shaping, and the various processes for material removal including computer-controlled machining. Simple joining processes and surface preparation are discussed. Economic and production aspects are considered throughout. Special Notes: Labs and field trips will be scheduled with class separately. Mechanical Engineering and Engineering Mechanics Sophomores and Juniors only.

**Prerequisites:** Students must have completed Lab Safety training prior to registering for this class.

Instructor(s): Y. Ronzhes
Area: Engineering.

**EN.530.310. Reverse Engineering and Diagnostics. 3.0 Credits.**
We will disassemble, inspect, diagnose, reverse engineer, repair (if needed) and test the subsystems of the first modern tractor, the iconic Ford N series (9N, 2N or 8N). The systems include power, cooling, electrical, ignition, hydraulic, transmission, steering, fuel, control (governor) and braking. The course is not about tractor repair, but upon successful completion, you will know the tractor's design and function, inside and out and you will be empowered with the confidence to understand and diagnose mechanical systems. Lessons learned will be applicable to other areas of mechanical engineering and will be particularly helpful for Senior Design. We will analyze (reverse engineer) the tractor. For example, given the engine delivers 28 HP at the PTO, how big does the PTO shaft need to be? How big is it? Over/under designed? How was it manufactured? How else could it have been manufactured. What size engine delivers 28 HP? What fuel consumption is needed? What cooling capacity is needed? Answering such questions will prepare students to ask appropriate questions in senior design. How big/strong do we need to make it? We will also have a functioning N-series tractor that will be 'sabotaged' each week for students to test their logic skills at diagnosing the cause of the malfunction. Course goals include developing diagnostic skills, learning to read electrical and hydraulic schematics and assembly drawings, developing engineering intuition and applying theoretical knowledge to practical problems. No mechanical experience is needed. Students with the least 'hands on' background will have the most to benefit, but even BAJA members have much to gain.

**Prerequisites:** Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.

Instructor(s): S. Belkoff
Area: Engineering.

**EN.530.327. Introduction to Fluid Mechanics Laboratory. 1.0 Credit.**
This is the laboratory that supports EN.530.327 Heat Transfer.

Instructor(s): C. Meneveau
Area: Engineering.

**EN.530.328. Fluid Mechanics II. 3.0 Credits.**

Instructor(s): C. Meneveau
Area: Engineering.

**EN.530.329. Introduction to Fluid Mechanics Laboratory. 1.0 Credit.**
This course is the complementary laboratory course and a required co-requisite for EN.530.327. Corequisite: EN.530.327 There will be four lab sessions, days and times TBA.

**Prerequisites:** Students must have completed Lab Safety training prior to registering for this class.

Instructor(s): S. Marra
Area: Engineering.

**EN.530.334. Heat Transfer. 3.0 Credits.**

**Prerequisites:** EN.530.231 AND EN.530.327
Instructor(s): A. Proserpetti; C. Meneveau; R. Mittal
Area: Engineering.

**EN.530.335. Heat Transfer Laboratory. 1.0 Credit.**
This is the laboratory that supports EN.530.334 Heat Transfer.

**Prerequisites:** Students must have completed Lab Safety training prior to registering for this class.

Corequisites: EN.530.334
Instructor(s): S. Marra
Area: Engineering.

**EN.530.343. Design and Analysis of Dynamical Systems. 3.0 Credits.**
Modeling and analysis of damped and undamped, forced and free vibrations in single and multiple degree-of-freedom linear dynamical systems. Introduction to stability and control of linear dynamical systems.

**Prerequisites:** Prereq: (110.108 and 110.109 and (110.202 or 110.211) and ((550.291) or (110.201 and 110.302) or (110.201 and 110.306)), and C- or better or concurrent enrollment in 530.202 or 560.202. MechE Majors must also have taken 530.241.

Students must have completed Lab Safety training prior to registering for this class.

Instructor(s): L. Whitcomb; S. Marra
Area: Engineering.

**EN.530.344. Design and Analysis of Dynamical Systems Laboratory. 1.0 Credit.**
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.

Corequisites: EN.530.343
Instructor(s): S. Marra
Area: Engineering.

**EN.530.352. Materials Selection. 4.0 Credits.**
An introduction to the properties and applications of a wide variety of materials: metals, polymers, ceramics, and composites. Considerations include availability and cost, formability, rigidity, strength, and toughness. This course is designed to facilitate sensible materials choices so as to avoid catastrophic failures leading to the loss of life and property.

**Prerequisites:** Prereq: EN.530.215 or permission of instructor
Instructor(s): S. Kang
Area: Engineering.
EN.530.354. Manufacturing Engineering. 3.0 Credits.
An introduction to the various manufacturing processes used to produce metal and nonmetal components. Topics include casting, forming and shaping, and the various processes for material removal including computer-controlled machining. Simple joining processes and surface preparation are discussed. Economic and production aspects are considered throughout. Special Notes: Labs and field trips will be scheduled with class separately. Mechanical Engineering and Engineering Mechanics Sophomores and Juniors only.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): Y. Ronzhes
Area: Engineering.

EN.530.366. Spacecraft Instrumentation Project. 3.0 Credits.
Investigation into the content relevant to an ongoing spacecraft instrumentation project. An interdisciplinary team will enhance the skills and knowledge of science and engineering students. Topics include mission background, planetary science, sensor design, spacecraft systems, and mission planning, and sensor fabrication, calibration, integration, and testing, data analysis and interpretation, scientific/technical writing and publication.
Instructor(s): D. Kraemer; S. Horst
Area: Engineering, Natural Sciences.

EN.530.371. Quantitative Applications in Mechanical Engineering. 3.0 Credits.
Solution of practical mechanical engineering problems with differential equations and linear algebra using numerical tools. Applications include topics like ballistics with viscous drag, fluid flow, solid mechanics, and kinematics. Numerical exercises with Matlab and other tools are used to reinforce concepts. Laboratory sessions will be scheduled in place of lectures a few times during the semester.
Prerequisites: EN.550.291 OR (AS.110.201 AND AS.110.302)
Instructor(s): D. Kraemer
Area: Engineering, Quantitative and Mathematical Sciences.

EN.530.381. Engineering Design Process. 3.0 Credits.
This course is to get you into the world of Senior Design, which means into our spaces, into the machine shop and into the mind set of doing design-build-test work. You will be assigned to be an assistant to one of our Senior Design teams. In industrial design practice this is absolutely typical and project teams grow or shrink as the need demands. It is also a good way for younger engineers to learn the ropes. You will have your own portfolio of design work to do, but it will be in the context of a large project where there has already been a lot of progress. You will have to fit in with that larger context – as usual for engineers – while also making your own contributions. There will be a lecture series which will introduce some key ideas and tools of the engineering designer. Rapid sketching of design ideas; more careful hand drawings that are like fast technical drawings; how to generate ideas and then develop the ideas into workable, feasible, affordable, desirable solutions; how to identify prototypes that will show the way forward, and then actually make them; how to work with a team and negotiate about time, deliverables and design detail; how to find parts from commercial suppliers, size them, order them and get them delivered; how to document design work in a fast and effective way. Some of the lectures will be in the form of case studies of excellent design work, and will be student-driven i.e. you will prepare a case study to present to the class which we then discuss.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): N. Scott
Area: Engineering.

EN.530.403. MechE Senior Design Project I. 4.0 Credits.
This senior year “capstone design” course is intended to give some practice and experience in the art of engineering design. Students working in teams of two to four will select a small-scale, industry-suggested design problem in the area of small production equipment, light machinery products, or manufacturing systems and methods. A solution to the problem is devised and constructed by the student group within limited time and cost boundaries. Preliminary oral reports of the proposed solution are presented at the end of the first semester. A final device, product, system, or method is presented orally and in writing at the end of the second semester. Facilities of the Engineering Design Laboratory (including machine shop time) and a specified amount of money are allocated to each student design team for purchases of parts, supplies, and machine shop time where needed. Recommended Course Background: ME Majors: EN.530.215, EN.530.327; EM & BME Majors: EN.530.215 or EN.530.405, and EN.530.327.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): N. Scott; S. Bailey
Area: Engineering.

EN.530.404. MechE Senior Design Project II. 4.0 Credits.
The Senior Design Project, a unique two-semester course, is the capstone of Johns Hopkins’s Mechanical Engineering Program. In the class, students working in small teams tackle specific design challenges presented by industry, government, and nonprofit organizations. The sponsors provide each team with a budget, access to world-class resources, and technical contacts. Ultimately, each team conceptualizes a novel solution to the sponsor’s problem and then designs, constructs, and tests a real-world prototype before presenting the finished product and specifications to the sponsor. The course requires students to draw upon the four years of knowledge and experience they’ve gained in their engineering studies and put it to practical use. Throughout the year, they produce progress reports as they design, build, and test the device they are developing. Combining engineering theory, budget and time management, and interactions with real clients, the senior design project is critical to students’ preparation for the transition from school to the workplace.
Prerequisites: EN.530.403
Instructor(s): N. Scott; S. Bailey
Area: Engineering Writing Intensive.

EN.530.405. Mechanics of Advanced Engineering Structures. 3.0 Credits.
This course provides an introduction to the mathematical and theoretical foundations of the mechanics of solids and structures. We will begin with the mathematical preliminaries used in continuum mechanics: vector and tensor calculus, then introduce kinematics and strain measures, descriptions of stress in a body, frame indifference, conservation laws: mass, momentum, energy balance, and entropy. These concepts will be applied to develop the constitutive equations for solids and fluids, methods for solving boundary values problems that occur in engineering structures, energy methods and foundations of the finite element method.
Instructor(s): J. El-Awady
Area: Engineering, Natural Sciences.
EN.530.410. Biomechanics of the Cell. 3.0 Credits.
Mechanical aspects of the cell are introduced using the concepts in continuum mechanics. Discussion of the role of proteins, membranes and cytoskeleton in cellular function and how to describe them using simple mathematical models.
Instructor(s): S. Sun
Area: Engineering, Natural Sciences.

EN.530.414. Computer-Aided Design. 3.0 Credits.
The course outlines a modern design platform for 3D modeling, analysis, simulation, and manufacturing of mechanical systems using the "Pro/E" package by PTC. The package includes the following components: • Pro/ENGINEER: is the kernel of the design process, spanning the entire product development, from creative concept through detailed product definition to serviceability. • Pro/MECHANICA: is the main analysis and simulation component for kinematic, dynamic, structural, thermal and durability performance. • Pro/NC: is a numeric-control manufacturing package. This component provides NC programming capabilities and tool libraries. It creates programs for a large variety of CNC machine tools.
Instructor(s): D. Stoianovici
Area: Engineering.

EN.530.417. Fabricatology - Advanced Materials Processing. 3.0 Credits.
The "Fabricatology" is a course that students can learn how to make desired shapes, structures, and surfaces across various length scales. It will introduce rich scientific and engineering knowledge related to fabrication at multiple length scales and the generated materials and mechanical systems can be utilized for studying diverse topics including energy harvesting, metamaterials, wetting, and information storage. From this course, students can learn principles and technologies to control shapes at various length scales and processes to control internal structures or surface properties for desired properties/functions. They will be also introduced to exciting recent development in the field so that they can have a comprehensive knowledge about the subject.
Recommended Course Background: coursework in introduction to materials chemistry or engineering materials.
Instructor(s): S. Kang
Area: Engineering.

EN.530.418. Aerospace Structures & Materials. 3.0 Credits.
An introduction to the design of aircraft and spacecraft structures and components. This course will build on skills learned in EN.530.215 and EN.530.352. Recommended Course Background: EN.530.352 or instructor permission.
Instructor(s): T. Dragone
Area: Engineering.

EN.530.420. Robot Sensors/Actuators. 4.0 Credits.
Introduction to modeling and use of actuators and sensors in mechatronic design. Topics include electric motors, solenoids, micro-actuators, position sensors, and proximity sensors.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module; ((AS.171.101 AND AS.171.102) OR (AS.171.107 AND AS.171.108) OR (EN.530.103 AND EN.530.104) OR (EN.530.123 AND EN.530.124)) AND (AS.110.106 OR AS.110.108) AND AS.110.109 AND (AS.110.202 OR AS.110.211) AND (EN.550.291 OR AS.110.302) AND (EN.530.241 OR EN.520.230 OR (EN.520.132 AND EN.520.345))
Instructor(s): D. Kraemer; N. Cowan
Area: Engineering.

EN.530.421. Mechatronics. 3.0 Credits.
Students from various engineering disciplines are divided into groups of two to three students. These groups each develop a microprocessor-controlled electromechanical device, such as a mobile robot. The devices compete against each other in a final design competition. Topics for competition vary from year to year. Class instruction includes fundamentals of mechanism kinematics, creativity in the design process, an overview of motors and sensors, and interfacing and programming microprocessors.
Prerequisites: EN.530.420 or EN.520.240 or permission of instructor; Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Rizk
Area: Engineering.

EN.530.424. Dynamics of Robots and Spacecraft. 3.0 Credits.
An introduction to Lagrangian mechanics with application to robot and spacecraft dynamics and control. Topics include rigid body kinetics, efficient formulation of equations of motion, stability theory, and Hamilton's principle.
Instructor(s): G. Chirikjian; J. Kim
Area: Engineering.

EN.530.425. Mechanics of Flight. 3.0 Credits.
Instructor(s): K. Phillips
Area: Engineering.

EN.530.426. Biofluid Mechanics. 3.0 Credits.
Course will cover selected topics from physiological fluid dynamics, including respiratory flow patterns, blood flow and pulse propagation, aerodynamics of phonation and speech, rheology of blood flow in the microcirculation, aquatic animal propulsion, and animal flight.
Instructor(s): R. Mittal
Area: Engineering.

EN.530.427. Intermediate Fluid Mechanics. 3.0 Credits.
Instructor(s): G. Tryggvason
Area: Engineering.
EN.530.430. Applied Finite Element Analysis. 3.0 Credits.
This course will introduce finite element methods for analysis of solids, structures and heat transfer problems. Following topics will be considered. Procedure to defining a mechanics problem: governing equations, constitutive equations, boundary and initial value problems. Theory and implementation of the finite element methods for static analysis using linear elasticity. Finite element analysis (FEA) using ABAQUS software. Verification and validation, understanding uncertainty. Introduction to other FEA topics: structural elements, dynamic analysis, heat transfer and thermodynamics using ABAQUS. The course will include assignments and a term project. The term project is mandatory for graduate students and will involve applying FEA to an engineering problem or a research problem, interpretation of results and documenting a term paper.
Prerequisites: Prerequisite: EN.550.291 OR AS.110.302, and matrix analysis / algebra and programming recommended.
Instructor(s): L. Voo
Area: Engineering.

EN.530.432. Jet & Rocket Propulsion. 3.0 Credits.
The course covers associated aircraft and spacecraft and power generation. The first part reviews the relevant thermodynamics and fluid mechanics, including isentropic compressible flow, Rayleigh and Fanno lines, shock and expansion waves. Subsequently, the performance of various forms of aviation gas turbines, including turbo-jet, turbo-fan, turbo-prop and ram-jet engines are discussed, followed by component analyses, including inlet nozzles, compressors, combustion chambers, turbines and afterburners. Axial and centrifugal turbomachines are discussed in detail, including applications in aviation, power generation and liquid transport. The section on foundations of combustion covers fuels, thermodynamics of combustion, and energy balance. The last part focuses on rockets, including classification, required power for space flight, chemical rocket components, and combustion involving liquid and solid fuels.
Instructor(s): J. Katz
Area: Engineering.

EN.530.435. Guidance and Control of Flight Vehicles. 3.0 Credits.
This course introduces the fundamental concepts of guidance and control of rockets and will highlight methodologies often employed in industry. The topics covered include: aerodynamic control, review of flight control principles (transfer functions, block diagram reduction, root locus, frequency domain methods), nonlinear representation of an airframe, linearization of an airframe, flight control design of a rocket, three-loop autopilot design, and fundamentals of tactical guidance (proportional navigation guidance theory, zero effort miss). Co-listed with EN.530.635
Prerequisites: EN.530.343
Instructor(s): K. Phillips
Area: Engineering.

EN.530.439. Comparative Biomechanics. 3.0 Credits.
Instructor(s): C. Li
Area: Engineering.

EN.530.441. Introduction to Biophotonics. 3.0 Credits.
The primary aim for this course is to explore the unique and diverse properties of light that makes it suited for diagnosis, imaging, manipulation and control of biological structure and function from the nanoscale to the tissue level. The course will focus on different optical spectroscopic and microscopic modalities that provide biochemical and morphological information, while introducing new ideas on analysis and interpretation of the acquired data. We will also discuss manipulation methods, including optical tweezers and laser scissors, and low-level light therapy. In all of these areas, the idea is to develop a basic understanding of the subject and to use it for finding solutions to real-world problems in healthcare. Discussions and open exchanges of ideas will be strongly emphasized.
Instructor(s): I. Barman
Area: Engineering.

EN.530.443. Fundamentals of Microscale Phenomena. 3.0 Credits.
This course will introduce fundamental physical and chemical principles involved in unique microscale phenomena. Topics to be covered include issues associated with being in micrometers in science and engineering, fluid mechanics in micro systems, diffusion, surface tension, surfactants, and interfacial forces, Interfacial hydrodynamics, Mechanical properties of materials in microscale. Students will learn about applications, enabled by the discussed principles. Recommended Pre-Requisites: EN.530.334
Prerequisites: EN.530.327 AND EN.530.231
Instructor(s): S. Hur
Area: Engineering, Quantitative and Mathematical Sciences.

EN.530.445. Introduction to Biomechanics. 3.0 Credits.
An introduction to the mechanics of biological materials and systems. Both soft tissue such as muscle and hard tissue such as bone will be studied as will the way they interact in physiological functions. Special emphasis will be given to orthopedic biomechanics. Recommended Course Background: EN.530.215/EN.530.216 and Lab or equivalent. If you have not taken this course or an equivalent, please contact the instructor before registering to ensure you have the appropriate background knowledge to succeed in this course.
Instructor(s): S. Belkoff
Area: Engineering.

EN.530.446. Experimental Methods in Biomechanics. 3.0 Credits.
An introduction to experimental methods used in biomedical research. Standard experimental techniques will be applied to biological tissues, where applicable and novel techniques will be introduced. Topics include strain gauges, extensometers, load transducers, optical kinematic tracking, digital image correlation, proper experimental design, calibration and error analysis. Of particular emphasis will be maintaining native tissue temperature and hydration. Laboratory will include "hands-on" testing.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.
Instructor(s): S. Belkoff
Area: Engineering, Natural Sciences.
EN.530.448. Biosolid Mechanics. 3.0 Credits.
This class will introduce fundamental concepts of statics and solid mechanics and apply them to study the mechanical behavior of bones, blood vessels, and connective tissues such as tendon and skin. Topics to be covered include concepts of small and large deformation, stress, constitutive relationships that relate the two, including elasticity, anisotropy, and viscoelasticity, and experimental methods. Recommended Course Background: AS.110.201 and AS.110.302, as well as a class in statics and mechanics
Instructor(s): T. Nguyen
Area: Engineering.

EN.530.455. Additive Manufacturing. 3.0 Credits.
The emergence of additive manufacturing (AM) as a viable technology for depositing materials with intricate shapes and architectures enables personal fabrication and threatens to transform global supply chains. This course will give a comprehensive introduction to AM of polymers, metals and ceramics, including: processing fundamentals, processing-structure-property relations and applications. Implications for the design, qualification and introduction of AM products will be addressed, and a variety of applications will be reviewed and used as case studies. Recommended knowledge of Materials Science equivalent to 530.352 Materials Selection. Concurrent enrollment in 530.352 Materials Selection is welcome.
Instructor(s): K. Hemker
Area: Engineering.

EN.530.464. Energy Systems Analysis. 3.0 Credits.
This course discusses the grid integration of renewable energy systems. The main emphasis is on grid level effects of renewable energy, particularly wind power systems. It begins with an introduction to basic power system concepts along with power flow analysis (and optimization). Then, important concepts for wind power systems are discussed. Following that, integration issues for wind power at the transmission level and solar cell integration at the distribution level are introduced. The last part of the course will focus on current research in these areas. Students will choose a system to research and present a project or literature review at the end of the term. Prior knowledge of optimization is helpful, but not required. Co-listed with EN530.664
Instructor(s): D. Gayme
Area: Engineering.

EN.530.470. Space Vehicle Dynamics & Control. 3.0 Credits.
In this course we study applied spacecraft orbital and attitude dynamics and their impact on other subsystems. In the orbital dynamics part of the course, we discuss some the issues associated with orbital insertion, control and station keeping. Focus is on the two-body problem regime where conic solutions are valid. Orbit perturbations are also considered. For attitude dynamics, different attitude representations such as of direction cosines, quaternions, and angles are introduced. Then we look at the forces and moments acting on space vehicles. Attitude stability and control considerations are introduced.
Instructor(s): M. Ozimek; T. McGee
Area: Engineering.

EN.530.473. Molecular Spectroscopy and Imaging. 3.0 Credits.
The overarching objective of this course is to understand, employ and innovate molecular spectroscopy and optical imaging tools. The emphasis will be to bridge the domain between molecular spectroscopy, which provides exquisite chemical information, and the imaging capabilities of microscopy to seamlessly traverse between structural and biochemical spaces. The course will build on the foundational principles of light-matter interactions and an understanding of light sources, geometrical and wave optics, and detectors. Using vibrational and fluorescence spectroscopy as the tools of choice, we will discuss the design and fabrication of molecular reporters that offer unprecedented sensitivity, specificity and multiplexing capabilities in imaging of live biological specimen. Finally, we will learn about spectral and image-processing algorithms that have fundamentally changed the nature and quantity of useful information and have directly lead to breakthroughs in super-resolution imaging and multi-modal image fusion. All through the course, the focus will be on the underlying concepts and physical insights as we navigate through a diverse array of biophotonics applications.
Instructor(s): I. Barman
Area: Engineering.

EN.530.474. Effective and Economic Design for Biomedical Instrumentation. 4.0 Credits.
This course is to introduce students to the design, practice, and devices used in biomedical research. The class will be divided into two parts: lecture and lab. In the lectures, students will learn the physics behind the device, the specific requirements of biomedical instruments, and the engineering principles to construct the devices. Lab sessions will focus on designing and building a prototype device. This course aims to forge collaboration between biomedical researchers and mechanical engineers. The goal is to make the devices accessible to the biomedical research community as well as the general public. Economical availability will be one of the critical elements in the device design. Students will be encouraged to build the devices within a healthy budget. PREREQUISITES: Introductory Physics, Programming, and CAD
Instructor(s): Y. Chen
Area: Engineering.

EN.530.475. Locomotion I: Mechanics. 3.0 Credits.
This is a course on the mechanics of locomotion in animals and machines (particularly bio-inspired and biomimetic robots). Locomotion emerges from effective physical interaction of an animal or a machine with the surrounding environment; therefore, the ability to generate appropriate forces (besides appropriate sensing and control) is essential to successful locomotion. From a mechanics point of view, we will discuss why animals move amazingly well in almost any environment, how they have inspired some highly successful machines, and yet why the majority of robots still struggle in environments that are only modestly complex and how they may be improved by better understanding the mechanics of locomotion. Primary focus will be on terrestrial locomotion, but aerial and aquatic locomotion will be also discussed, all with numerous examples. General principles and integration of knowledge from engineering, biology, and physics will be emphasized. Students from ME and other departments are welcome. A strong understanding of Newtonian mechanics is required. Visit http://li.me.jhu.edu/teaching for more information. Recommended Course Background: B+ or higher in EN.530.202 Dynamics or EN.560.202
Instructor(s): C. Li
Area: Engineering.
EN.530.476. Locomotion in Mechanical and Biological Systems. 3.0 Credits.
This is a course on the mechanics of locomotion in animals and machines (particularly bio-inspired and biomimetic robots). It will introduce you to the breadth of diverse topics within the field of animal and robot locomotion. We will discuss why animals move amazingly well in all kinds of environments, how they have inspired some highly successful machines, and yet why the majority of robots still struggle in environments that are only modestly complex. Terrestrial, aerial, and aquatic locomotion will be discussed, with numerous examples. General principles and integration of knowledge from engineering, biology, and physics will be emphasized. Students from ME and other departments are welcome. Please visit http://li.me.jhu.edu/teaching for updated information.
Instructor(s): C. Li
Area: Engineering.

EN.530.486. Mechanics of Locomotion. 3.0 Credits.
This is a course on the mechanics of locomotion in animals and machines (particularly bio-inspired and biomimetic robots). It will introduce you to the breadth of diverse topics within the field of animal and robot locomotion. We will discuss why animals move amazingly well in all kinds of environments, how they have inspired some highly successful machines, and yet why the majority of robots still struggle in environments that are only modestly complex. Terrestrial, aerial, and aquatic locomotion will be discussed, with numerous examples. General principles and integration of knowledge from engineering, biology, and physics will be emphasized. Students from ME and other departments are welcome. Please visit http://li.me.jhu.edu/teaching for updated information. Co-listed with EN.530.686
Prerequisites: EN.530.202 OR EN.560.202 with grade of B+ or higher.
Instructor(s): C. Li
Area: Engineering, Quantitative and Mathematical Sciences.

EN.530.480. Image Processing and Data Visualization. 3.0 Credits.
The course will be divided into two parts. In the first part, students will learn the basics of image filtering, including handling noisy background, creating 2D/3D filters, Fourier domain operations, and building processing pipelines. In the second part, students will learn the importance of data visualization, as well as the skills to use the aids such as virtual reality goggles and haptic devices to help scientists gain insights for data interpretation. Recommended experience programming in Matlab.
Instructor(s): Y. Chen
Area: Engineering, Quantitative and Mathematical Sciences.

EN.530.483. Applied Computational Modeling in Aerodynamics and Heat Transfer. 3.0 Credits.
Introduction to fundamental principles and applications of the computational modeling in fluid dynamics and heat transfer. Emphasis is on basics of finite-difference methods and hands-on experience in code development as well as the use of a commercial software package (ANSYS CFX) for modeling and simulation. Students will also learn about meshing strategies, post-processing, and critical analysis of simulation results. The concept of numerical errors and the validation and verification will also be emphasized. Recommended Background: (1) Undergraduate or introductory level course in fluid dynamics or heat transfer or transport phenomena or classical mechanics. (2) Basic expertise in writing computer codes (MATLAB or C++ or Fortran or Python).
Instructor(s): J. Seo
Area: Engineering, Quantitative and Mathematical Sciences.

EN.530.485. Physics and Feedback in Living Systems. 3.0 Credits.
The complex mechanisms of living systems cannot be reduced to a set of base pairs: genes are only one part of mystery of life. Rather, organisms must develop, move, interact, and function in their natural environment, and thus are constrained by the laws of physics. For example, during locomotion an animal must accelerate according to Newton’s laws by applying forces between itself and the environment. Beyond physical principles alone, biological systems extensively use feedback to enhance stability and facilitate adaptation in the presence of a changing world. This course examines the critical roles that physical principles and feedback mechanisms play in life, with special emphasis on animal locomotion and its control. Juniors and Seniors only.
Instructor(s): N. Cowan
Area: Engineering.
EN.530.527. Independent Study. 1.0 - 3.0 Credits. Students pursue research problems individually or in pairs. Although the research is under the direct supervision of a faculty member, students are encouraged to pursue the research as independently as possible. Instructor(s): Staff.

EN.530.597. Research - Summer. 1.0 - 3.0 Credits. Instructor(s): Staff.

EN.530.599. Independent Study. 1.0 - 4.0 Credits. Instructor(s): Staff.

EN.530.600. MSE Graduate Research. 3.0 - 10.0 Credits. Instructor(s): Staff.

EN.530.602. Master's Essay Research and Writing. 3.0 - 10.0 Credits. This course will be taken by Mechanical Engineering students when doing research and/or writing for the Master's Essay. Note that "essay" is the official term for a thesis at Johns Hopkins University. Instructor(s): Staff.

EN.530.603. Applied Optimal Control. 3.0 Credits. The course focuses on the optimal control of dynamical systems subject to constraints and uncertainty by studying analytical and computational methods leading to practical algorithms. Topics include calculus of variations, nonlinear local optimization, global stochastic search, dynamic programming, linear quadratic (gaussian) control, numerical trajectory optimization, model-predictive control. Advanced topics include approximate dynamic programming and optimal control on manifolds. The methods and algorithms will be illustrated through implementation of various simulated examples. Recommended Course Background: Linear Algebra and Differential Equations; experience with control systems; programming in MATLAB and/or Python. Instructor(s): M. Kobilarov.

EN.530.605. Mechanics of Solids and Materials. 3.0 Credits. This course provides an introduction to the mathematical and theoretical foundations of the mechanics of solids and materials. We will begin with the mathematical preliminaries of continuum mechanics: vectors and tensors calculus, then introduce the kinematics of deformation and descriptions of stress in a continuum: Eulerian and Lagrangian descriptions, followed by conservation laws: mass, momentum, and energy balance, and entropy. These concepts will be applied to develop the concepts of constitutive relations: frame invariance, material symmetry, and dissipation. The second half of the class will be devoted to elasticity, both classical and finite elasticity, and solution methods for boundary value problems. Instructor(s): T. Nguyen.

EN.530.606. Mechanics of Solids and Materials II. 3.0 Credits. An overview of the area of the mechanics of solids and materials, with the intent of providing the foundation for graduate students interested in research that involves these disciplines. The course is based on the principles of continuum mechanics, and covers the fundamental concepts of elasticity, plasticity, and fracture as applied to materials. One objective is to get graduate students to the point that they can understand significant fractions of research seminars and papers in this area. This mathematically rigorous course emphasizes the setup and solution of boundary value problems in mechanics, and attempts to integrate the primary behaviors with deformation and failure mechanisms in materials. Special topics covered may include (depending on the interests of the student body) wave propagation, viscoelasticity, geomechanics or biomechanics. Instructor(s): R. Hurley Area: Engineering.

EN.530.610. Statistical Mechanics in Biological Systems. 3.0 Credits. Application of equilibrium and nonequilibrium concepts in statistical mechanics to biology is presented in some detail. Topics include many-body dynamics and equilibrium ensembles, thermodynamics and phase transitions, free energy functionals, computer simulations of biological systems, nonequilibrium model such as the Langevin equation and the Fokker-Planck equation, kinetic models of biochemical networks, Markov models of stochastic systems and pattern formation in nonequilibrium systems. Emphasis will be on quantitative understanding of biological problems. Instructor(s): S. Sun.

EN.530.612. Computational Solid Mechanics. 3.0 Credits. This course teaches in-depth and hands-on understanding of numerical methods for solid mechanics problems. The course begins with a review of the fundamental concepts of the finite element method for linear boundary value problems (BVP) and initial boundary value problems (IBVP) in solid mechanics. Then more advance methods for nonlinear BVPs are presented and applied to problems of material inelasticity and finite elasticity. Topics covered include the strong and weak statements of the BVP, weighted residual methods, time integration, Newton-type methods for nonlinear problems, and error estimation and convergence. Instructor(s): T. Nguyen.

EN.530.613. MechE Master's Design Project I. 4.0 Credits. This course is intended to give graduate students some practice and experience in the art of engineering design in conjunction with undergraduate students taking MechE Senior Design Project I. Students working in teams of two to four will select a small-scale, industry-suggested design problem in the area of small production equipment, light machinery products, or manufacturing systems and methods. A solution to the problem is devised and constructed by the student group within limited time and cost boundaries. Preliminary oral reports of the proposed solution are presented at the end of the first semester. A final device, product, system, or method is presented orally and in writing at the end of the second semester. Facilities of the Engineering Design Laboratory (including machine shop time) and a specified amount of money are allocated to each student design team for purchases of parts, supplies, and machine shop time where needed. Recommended Course Background: C- or higher in both 530.403 and 530.404 MechE Senior Design Project I/II. Students from other universities may ask to be considered if they have taken a course like MechE Senior Design Project i.e. two semesters, design-build-test, ideally with industry connection. Instructor(s): N. Scott; S. Bailey Area: Engineering.

EN.530.618. Fabricatology - Advanced Materials Processing. 3.0 Credits. The “Fabricatology” is a course that students can learn how to make desired shapes, structures, and surfaces across various length scales. It will introduce rich scientific and engineering knowledge related to fabrication at multiple length scales and the generated materials and mechanical systems can be utilized for studying diverse topics including energy harvesting, metamaterials, wetting, and information storage. From this course, students can learn principles and technologies to control shapes at various length scales and processes to control internal structures or surface properties for desired properties/functions. They will be also introduced to exciting recent development in the field so that they can have a comprehensive knowledge about the subject. Recommended Course Background: coursework in introduction to materials chemistry or engineering materials. Instructor(s): S. Kang.
EN.530.619. Aerospace Structures and Materials. 3.0 Credits.
A graduate-level introduction to the design of aircraft and spacecraft structures and components. This course will build on skills learned in EN.530.215 Mechanics Based Design and EN.530.352 Materials Selection. Recommended Course Background: EN.530.352 (or knowledge of materials selection) or instructor permission.
Instructor(s): K. Phillips.

EN.530.629. Simulation and Analysis of Ocean Wave Energy Systems. 3.0 Credits.
Various aspects of a simulation of a dynamic system are covered in this project-based course. Open-source software packages are used to simulate the hydrodynamics and rigid-body dynamics of an ocean wave-energy conversion project. Topics include: wave-energy converter types (buoyancy, hydrostatic pressure, potential energy, etc), multi-body coupled dynamics, hydrodynamics, and energy conversion. Prerequisites: undergraduate-level dynamics, fluid mechanics, computer programming (any language).
Instructor(s): D. Kraemer.

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Instructor(s): D. Kraemer.
EN.530.636. Bioinspired Science and Technology. 3.0 Credits.
Nature has been a source of inspiration for scientists and engineers and it receives particular attention recently to address many challenges the human society encounters. The course will study novel natural materials/structures with unique properties, the underlying principles, and the recent development of the bio-inspired materials and systems. From this course, students can learn about ingenious and sustainable strategies of organisms, open eyes about various phenomena in nature, and get inspiration for opening new directions of science and technology.
Instructor(s): N. Cowan; S. Kang.

EN.530.637. Energy and the Environment. 3.0 Credits.
This course focuses on advanced topics related to energy and thermodynamics. The objective of this course is to provide a thorough understanding of the environmental impacts related to energy conversion systems. The use of the second law of thermodynamics is introduced to quantify the performance of energy conversion systems. Topics such as global warming, alternative energy sources (solar, wind power, geothermal, tides, etc.) and new technology (fuel cells and hydrogen economy) and resources and sustainable development are addressed. A section of the course is devoted to current trends in nuclear energy generation and environmental issues associated with it.
Instructor(s): C. Herman.

EN.530.639. Comparative Biomechanics. 3.0 Credits.
Instructor(s): C. Li.

EN.530.642. Plasticity. 3.0 Credits.
Instructor(s): S. Papanikolaou.

EN.530.643. Fundamentals of Microscale Phenomena. 3.0 Credits.
This course will introduce fundamental physical and chemical principles involved in unique microscale phenomena. Topics to be covered include issues associated with being in micrometers in science and engineering, fluid mechanics in micro systems, diffusion, surface tension, surfactants, and interfacial forces, Interfacial hydrodynamics, Mechanical properties of materials in microscale. Students will learn about applications, enabled by the discussed principles. Required Pre-Requisites: Knowledge of fluid mechanics and thermodynamics. Recommended Pre-Requisites: heat transfer. Suggested: advanced knowledge of fluid mechanics plus knowledge of cell and tissue engineering.
Instructor(s): S. Hur.

EN.530.645. Kinematics. 3.0 Credits.
A theoretical treatment of the kinematics of mechanisms, machines, and robotic manipulators intended for (though not restricted to) graduate students. Topics include parameterizations of spherical motion - Euler angles, Rodrigues parameters, unit quaternions, the matrix exponential; analysis of planar and spatial linkages; robot kinematics - forward and inverse kinematics, singularities, elementary topological issues; theory of wrenches and twists; research issues in robot kinematics - redundancy resolution, grasping and rolling contact, steering of nonholonomic systems. Other advanced topics will be covered as time permits.
Recommended Course Background: Undergraduate linear algebra and multivariable calculus.
Instructor(s): G. Chirikjian.

EN.530.646. Robot Devices, Kinematics, Dynamics, and Control. 4.0 Credits.
Graduate-level introduction to the mechanics of robotic systems with emphasis on the mathematical tools for kinematics and dynamics of robot arms and mobile robots. Topics include the geometry and mathematical representation of rigid body motion, forward and inverse kinematics of articulated mechanical arms, trajectory generation, manipulator dynamics, actuation, and design issues, manipulator control, and additional special topics. Recommended course background: multivariable integral and differential calculus, classical physics, linear algebra, ordinary differential equations. Programming: Knowledge of the Matlab programming language including data input/output, 1-D and 2-D arrays, and user-defined function calls. Students with experience with these language elements in other programming languages (C, C++, Python, Java, etc.) should be able to self-tutor themselves in the Matlab language as part of the programming exercises.
Instructor(s): J. Kim.

EN.530.647. Adaptive Systems. 4.0 Credits.
Graduate-level introduction to adaptive identification and control. Emphasis on applications to mechanical systems possessing unknown parameters (e.g., mass, inertia, friction). Topics include stability of linear and non-linear dynamical systems, Lyapunov stability, input-output stability, adaptive identification, and direct and indirect adaptive control. Required Prerequisites: Calculus I, II, and III; Physics I and II; Linear Algebra; Differential Equations; Graduate linear systems theory such as EN.520.601 Introduction to Linear Systems Theory is required prerequisite. Please see the course home page here for additional information: https://dscl.lcsr.jhu.edu/courses/530-647-adaptive-systems-fall-2017. Audit registration not permitted.
Instructor(s): L. Whitcomb.

EN.530.649. System Identification. 3.0 Credits.
This course will cover several fundamental approaches system identification, including spectral, prediction error, subspace, and "online" (adaptive) identification methods. The emphasis will be on LTI systems, but some time will be devoted to system identification for classes of nonlinear dynamical systems, such as those that are linear in parameters.
Instructor(s): N. Cowan.

EN.530.653. Advanced Systems Modeling. 3.0 Credits.
This course covers the following topics at an advanced level: Newton's laws and kinematics of systems of particles and rigid bodies; Lagrange's equations for single- and multi-degree-of-freedom systems composed of point masses; normal mode analysis and forced linear systems with damping, the matrix exponential and stability theory for linear systems; nonlinear equations of motion: structure, passivity, PD control, noise models and stochastic equations of motion; manipulator dynamics: Newton-Euler formulation, Langrange, Kane's formulation of dynamics, computing torques with O(n) recursive manipulator dynamics: Luh-Walker-Paul, Hollerbach, O(n) dynamic simulation: Rodrigues-Jain-Kreutz, Saha, Fixman. There is also an individual course project that each student must do which related the topics of this course to his or her research.
Instructor(s): G. Chirikjian.
EN.530.654. Advanced Systems Modeling II. 3.0 Credits.
A continuation of EN.530.653, this course covers the following topics at an advanced level: Newton's laws of kinematics of systems of particles and rigid bodies; Lagrange's equations for single- and multi-degree-of-freedom systems composed of point masses; normal mode analysis and forced linear systems with damping, the matrix exponential and stability theory for linear systems; nonlinear equations of motion; structure, passivity, PD control, noise models and stochastic equations of motion; manipulator dynamics: Newton-Euler formulation, Lagrange, Kane's formulation of dynamics, computing torques with O(n) recursive manipulator dynamics:Luh-Walker-Paul, Hollerbach, O(n) dynamics simulation: Rodrigues-Jain-Kreutz, Saha, Fixman. There is also an individual course project that each student must do which relates the topics of this course to his or her research.
Instructor(s): G. Chirikjian.

EN.530.655. Additive Manufacturing (Graduate). 3.0 Credits.
The emergence of additive manufacturing (AM) as a viable technology for depositing materials with intricate shapes and architectures enables personal fabrication and threatens to transform global supply chains. This course will give a comprehensive introduction to AM of polymers, metals and ceramics, including: processing fundamentals, processing-structure-property relations and applications. Implications for the design, qualification and introduction of AM products will be addressed, and a variety of applications will be reviewed and used as case studies. Recommended knowledge in Materials Science equivalent to 530.352 Materials Selection.
Instructor(s): K. Hemker.

EN.530.656. Deformation Mechanisms. 3.0 Credits.
An advanced course on the microscopic mechanisms that control the mechanical behavior of materials. Methods and techniques for measuring, understanding, and modeling: plasticity, creep, shear banding, and fracture will be addressed. Subjects to be covered include dislocation theory and strengthening mechanisms, high temperature diffusion and grain boundary sliding, shear localization, void formation, ductile rupture, and brittle fracture.
Instructor(s): K. Hemker.

EN.530.661. Applied Mathematics for Engineering. 3.0 Credits.
This course presents a broad survey of the basic mathematical methods used in the solution of ordinary and partial differential equations: linear algebra, vector calculus, power series, Fourier series, separation of variables, integral transforms.
Instructor(s): M. Hilpert.

EN.530.664. Energy Systems Analysis (graduate). 3.0 Credits.
This course discusses the grid integration of renewable energy systems. The main emphasis is on grid level effects of renewable energy, particularly wind power systems. It begins with an introduction to basic power system concepts along with power flow analysis (and optimization). Then, important concepts for wind power systems are discussed. Following that, integration issues for wind power at the transmission level and solar cell integration at the distribution level are introduced. The last part of the course will focus on current research in these areas. Students will choose a system to research and present a project or literature review at the end of the term. Prior knowledge of optimization is helpful, but not required. Co-listed with EN.530.464.
Instructor(s): D. Gayme.

EN.530.672. Biosensing & BioMEMS. 3.0 Credits.
The course discusses the principles of biosensing and introduces micro- and nano-scale devices for fluidic control and molecular/cellular manipulation, measurements of biological phenomena, and clinical applications.
Instructor(s): J. Wang.

EN.530.674. Effective and Economic Design for Biomedical Instrumentation. 4.0 Credits.
This course is to introduce students to the design, practice, and devices used in biomedical research. The class will be divided into two parts: lecture and lab. In the lectures, students will learn the physics behind the device, the specific requirements of biomedical instruments, and the engineering principles to construct the devices. Lab sessions will focus on designing and building a prototype device. This course aims to forge collaboration between biomedical researchers and mechanical engineers. The goal is to make the devices accessible to the biomedical research community as well as the general public. Economical availability will be one of the critical elements in the device design. Students will be encouraged to build the devices within a healthy budget. PREREQUISITES: Introductory Physics, Programming, and CAD
Instructor(s): Y. Chen
Area: Engineering.

EN.530.675. Locomotion I: Mechanics. 3.0 Credits.
This is a course on the mechanics of locomotion in animals and machines (particularly bio-inspired and biomimetic robots). Locomotion emerges from effective physical interaction of an animal or a machine with the surrounding environment; therefore, the ability to generate appropriate forces (besides appropriate sensing and control) is essential to successful locomotion. From a mechanics point of view, we will discuss why animals move amazingly well in almost any environment, how they have inspired some highly successful machines, and yet why the majority of robots still struggle in environments that are only modestly complex and how they may be improved by better understanding the mechanics of locomotion. Primary focus will be on terrestrial locomotion, but aerial and aquatic locomotion will be also discussed, all with numerous examples. General principles and integration of knowledge from engineering, biology, and physics will be emphasized. Students from ME and other departments are welcome. A strong understanding of Newtonian mechanics is required. Visit http://il.me.jhu.edu/teaching for more information. Recommended Course Background: B+ or higher in EN.530.202 Dynamics or EN.560.202 Dynamics
Instructor(s): C. Li
Area: Engineering.

EN.530.676. Locomotion II: Dynamics. 3.0 Credits.
Graduate course on mechanics and control in locomotion. Topics include modeling (e.g. Lagrangian mechanics), dynamical systems theory (nonholonomic systems, limit-cycle behavior, Poincaré analysis, and Floquet theory), design (control synthesis, mechanical design), and data-driven modeling from animal locomotor control experiments. Prerequisites: A graduate course in linear systems theory (e.g. EN.520.601). Suggested background (not required): 530.475/675.
Instructor(s): N. Cowan.
EN.530.678. Nonlinear Control and Planning in Robotics. 3.0 Credits.
The course starts with a brief introduction to nonlinear systems and covers selected topics related to model-based trajectory planning and feedback control. Focus is on applications to autonomous robotic vehicles modeled as underactuated mechanical systems subject to constraints such as obstacles in the environment. Topics include: nonlinear stability, stabilization and tracking, systems with symmetries, differential flatness, backstepping, probabilistic roadmaps, stochastic optimization. Recommended Course Background: multi-variable/differential calculus, AS.110.302, AS.110.201, undergraduate linear control, basic probability theory.
Instructor(s): M. Zadeh.

EN.530.681. TEM: Practice and Applications. 3.0 Credits.
A lab and lecture course covering the practical aspects of transmission electron microscopy. Electron diffraction, image formation, and analytical techniques are explained, and students are given an opportunity to gain hands-on microscopy experience.
Instructor(s): K. Hemker.

EN.530.682. Haptic Applications. 4.0 Credits.
An introduction to the required theoretical and practical background in the design and development of haptic applications. Haptic technology enables users to touch and/or manipulate virtual or remote objects in simulated environments or tele-operation systems. This course aims to cover the basics of haptics through lectures, lab assignments, a term project, and readings on current topics in haptics. Through lab assignments, students learn to create haptic-enabled virtual environments using software development toolkits and a haptic device. Students will be required to complete a project with approval of the instructor. Recommended course background: ME, CS, and ECE graduate and senior undergraduate students who are being enthusiastic to learn about haptics and knowledgeable in basic C++ programming. Students with experience with other programming languages (Python, Java, etc.) should be able to self-tutor themselves to complete lab assignments.
Instructor(s): M. Zadeh.

EN.530.683. Applied Computational Modeling in Aerodynamics and Heat Transfer. 3.0 Credits.
Introduction to fundamental principles and applications of the computational modeling in fluid dynamics and heat transfer. Emphasis is on basics of finite-difference methods and hands-on experience in code development as well as the use of a commercial software package (ANSYS CFX) for modeling and simulation. Students will also learn about meshing strategies, post-processing, and critical analysis of simulation results. The concept of numerical errors and the validation and verification will also be emphasized. Recommended Background: (1) Undergraduate or introductory level course in fluid dynamics or heat transfer or transport phenomena or classical mechanics. (2) Basic expertise in writing computer codes (MATLAB or C++ or Fortran or Python).
Instructor(s): J. Seo
Area: Engineering, Quantitative and Mathematical Sciences.

EN.530.684. Orientation Mapping of Crystalline Materials. 3.0 Credits.
Recent advances in instrumental capabilities are fast making it routine to acquire large 2D and 3D datasets and maps of crystalline materials. SEM-based orientation imaging microscopy (OIM) and transmission Kikuchi diffraction (TKD) and TEM-based precession-assisted crystal orientation mapping (PACOM) provide the means to characterize intra- and inter-granular details such as grain: orientation, size, shape, neighborhoods and GND distributions. This course will cover the science that underpins these technologies and provide practical experience in gathering, filtering, quantifying and displaying such information. It is motivated by the fact that emergent advances based on the practice of Integrated Materials Science and Engineering (ICMSE) and the Materials Genome Initiative (MGI) are predicated on the availability of physics-based, multi-scale models that are based on such detailed quantitative experimental observations of polycrystalline materials.
Instructor(s): K. Hemker.

EN.530.686. Mechanics of Locomotion. 3.0 Credits.
This is a course on the mechanics of locomotion in animals and machines (particularly bio-inspired and biomimetic robots). It will introduce you to the breadth of diverse topics within the field of animal and robot locomotion. We will discuss why animals move amazingly well in all kinds of environments, how they have inspired some highly successful machines, and yet why the majority of robots still struggle in environments that are only modestly complex. Terrestrial, aerial, and aquatic locomotion will be discussed, with numerous examples. General principles and integration of knowledge from engineering, biology, and physics will be emphasized. Students from ME and other departments are welcome. Please visit http://li.me.jhu.edu/teaching for updated information. Co-listed with EN.530.486
Instructor(s): C. Li.

EN.530.691. Haptic Interface Design for Human-Robot Interaction. 3.0 Credits.
This course provides an introduction to haptic interface design and analysis for human-robot interaction involving virtual environments, augmented reality, and teleoperation. Topics include human touch perception, haptic-focused mechatronic design, system modeling and analysis (kinematic and dynamic), human-in-the-loop feedback control, and haptic feedback evaluation. Recommended: coursework or knowledge of Dynamics and knowledge of feedback control, mechatronics, and Matlab.
Instructor(s): J. Brown.
EN.530.707. Robot System Programming. 4.0 Credits.
This course seeks to introduce students to open-source software tools that are available today for building complex experimental and fieldable robotic systems. The course is grouped into sections, each of which building on the previous in increasing complexity and specificity. tools and frameworks supporting robotics research, robotics-specific software frameworks, integrating complete robotic systems, and culminates with an independent project of the student’s own design using small mobile robots or other robots in the lab. Students will need to provide a computer (with at least a few GB of memory and a several tens of GB of disc space) running Ubuntu (https://www.ubuntu.com or one of its variants such as Xubuntu) and ROS (http://ros.org/). Students should have an understanding of intermediate programming in C/C++ (including data structures and object-oriented programming). Familiarity with Linux programming. Familiarity with software version control systems such as Git, and linear algebra. Students should see the course homepage http://dscl.lcsr.jhu.edu/ME530707_2018 for more information and to get started with the course. Required Course Prerequisite/Corequisite: EN.530.646 and EN.600.436. Registration only by permission of the instructor. Please contact Prof. Louis Whitcomb at llw@jhu.edu. Please put ‘530.707 Robot System Programming’ in the subject line of your email.
Instructor(s): L. Whitcomb.

EN.530.710. Optical Measurement Techniques. 3.0 Credits.
Optic-based techniques are being utilized as measurement and data transmission tools in a growing number of applications. The objective of this course is to introduce graduate students with limited background in optics (but with background in graduate-level mathematics) to the fundamentals of optics and their implementation. Topics covered include reflection, refraction, fluorescence, phosphorescence and diffraction of light; review of geometric optics, lenses, lens systems (microscope, telescope), mirrors, prisms; aberrations, astigmatism, coma, and methods to correct them; light as an electromagnetic wave; Fourier optics; spectral analysis of optical systems; coherent and incoherent imaging, holography, interferometry, diffraction grating; lasers, polarization, light detectors; elements of non-linear optics, birefringence; optical fibers, data transmission, and networking.
Instructor(s): J. Katz.

EN.530.726. Hydrodynamic Stability. 3.0 Credits.
Hydrodynamic linear stability theory is developed and applied to a variety of flow problems using analytical techniques and numerical methods. Necessary and sufficient conditions for flow stability are derived. Canonical examples are used to introduce various concepts including, e.g. temporal and spatial analyses, asymptotic and transient flow response, convective and absolute instability, global methods, and direct stability analysis.
Instructor(s): T. Zaki.

EN.530.730. Finite Element Methods. 3.0 Credits.
Variational methods and mathematical foundations, Direct and Iterative solvers, 1-D Problems formulation and boundary conditions, Trusses, 2-D/ 3D Problems, Triangular elements, QUAD4 elements, Higher Order Elements, Element Pathology, Improving Element Convergence, Dynamic Problems.
Instructor(s): J. Cheng.

EN.530.732. Fracture Of Materials. 3.0 Credits.
An advanced examination of fracture mechanisms in ductile and brittle materials. Both the mechanics and the materials aspects are covered with importance placed on the synthesis of the two approaches. Topics include linear elastic fracture mechanics, ductile fracture, the J-integral, atomistic aspects of fracture in polycrystalline materials, fracture in ceramics and polymers, influence of the material microstructure on fracture toughness and ductility in FCC and BCC materials.
Instructor(s): K. Ramesh.

EN.530.748. Stress Waves, Impacts and Shockwaves. 3.0 Credits.
Instructor(s): K. Ramesh.

EN.530.761. Mathematical Methods of Engineering I. 3.0 Credits.
This course is a fast-paced overview of some fundamental topics in applied mathematics including: linear algebra and matrix theory, ordinary differential equations, Laplace and Fourier transforms, as well as an introduction to partial differential equations.
Instructor(s): D. Gayme.

EN.530.766. Numerical Methods. 3.0 Credits.
Comprehensive introduction to the finite-difference method and associated numerical techniques for solving partial differential equations (PDEs) encountered in Engineering and Physics. Homework assignments and Project require substantial computer programming.
Instructor(s): T. Zaki.

EN.530.767. Computational Fluid Dynamics. 3.0 Credits.
Advanced introduction to finite-difference and finite-volume approaches to modeling incompressible flows. Computer project requiring programming.
Instructor(s): J. Seo.

EN.530.772. Non-Linear Finite Elements. 3.0 Credits.
This course will discuss state of the art theoretical developments and modeling techniques in nonlinear computational mechanics, for problems with geometric and material nonlinearities. Large deformation of elastic-plastic and visco-plastic materials, contact-friction and other heterogeneous materials like composites and porous materials will be considered. A wide variety of applications in different disciplines, e.g. metal forming, composite materials, polycrystalline materials will be considered. Co-listed with EN.560.772.
Instructor(s): S. Ghosh.

EN.530.777. Multiphase Flow. 3.0 Credits.
An introduction to basic contemporary ideas concerning gas, liquid, and solid-fluid two-phase flows.
Instructor(s): G. Tryggvason.

EN.530.790. Advanced Finite Element Methods and Multi-Scale Methods. 3.0 Credits.
Instructor(s): S. Ghosh.
EN.530.800. Independent Study. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.530.801. PhD Graduate Research. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.530.802. PhD Graduate Research. 3.0 - 20.0 Credits.
Department approval required to enroll in 01.
Instructor(s): Staff.

EN.530.803. Mechanical Engineering Seminar. 1.0 Credit.
Instructor(s): R. Mittal.

EN.530.804. Mechanical Engineering Seminar. 1.0 Credit.
Instructor(s): R. Mittal.

EN.530.807. Graduate Research Seminar in Fluid Mechanics. 1.0 Credit.
Instructor(s): J. Katz.

EN.530.808. Graduate Seminar in Fluid Mechanics. 1.0 Credit.
Instructor(s): J. Katz.

EN.530.810. Mechanics and Materials Graduate Seminar. 1.0 Credit.
Instructor(s): S. Kang.

EN.530.897. Research-Summer. 3.0 - 20.0 Credits.
Instructor(s): Staff.

EN.530.899. Independent Study-Summer. 1.0 - 3.0 Credits.
Instructor(s): Staff.

Cross Listed Courses

General Engineering
EN.500.112. Gateway Computing. 3.0 Credits.
This course introduces fundamental programming concepts and
techniques, and is intended for all who plan to develop computational
artifacts or intelligently deploy computational tools in their studies
and careers. Topics covered include the design and implementation of
algorithms using variables, control structures, arrays, functions, files,
testing, debugging, and structured program design. Elements of object-
oriented programming, algorithmic efficiency and data visualization
are also introduced. Students deploy programming to develop working
solutions that address problems in engineering, science and other
areas of contemporary interest that vary from section to section.
Course homework involves significant programming. Attendance and
participation in class sessions are expected.
Instructor(s): I. Sekyonda; J. Selinski; M. Darvish Darab
Area: Engineering, Natural Sciences.

EN.500.602. Seminar: Environmental and Applied Fluid Mechanics. 1.0
Credit.
Instructor(s): J. Katz.

EN.500.745. Seminar in Computational Sensing and Robotics. 1.0 Credit.
Instructor(s): J. Katz.
Seminar series in robotics. Topics include: Medical robotics, including
computer-integrated surgical systems and image-guided intervention.
Sensor based robotics, including computer vision and biomedical image
Autonomous robotics for monitoring, exploration and manipulation with
applications in home, environmental (land, sea, space), and defense
areas. Biorobotics and neuromechanics, including devices, algorithms
and approaches to robotics inspired by principles in biomechanics and
neuroscience. Human-machine systems, including haptic and visual
feedback, human perception, cognition and decision making, and human-
machine collaborative systems. Cross-listed Mechanical Engineering,
Computer Science, Electrical and Computer Engineering, and Biomedical
Engineering.
Instructor(s): L. Whitcomb; P. Kazanzides.

Electrical Computer Engineering

EN.520.340. Introduction to Mechatronics. 3.0 Credits.
Introduction to Mechatronics is mostly hands-on, interdisciplinary
design class consisting of lectures about key topics in mechatronics,
and lab activities aimed at building basic professional competence.
After completing the labs, the course will be focused on a final mini-
project for the remainder of the semester. This course will encourage and
emphasize active collaboration with classmates. Each team will plan,
design, manufacture and/or build, test, and demonstrate a robotic system
that meets the specified objectives.
Instructor(s): I. Sekyonda
Area: Engineering.

EN.520.353. Control Systems. 3.0 Credits.
Modeling, analysis, and an introduction to design for feedback
control systems. Topics include state equation and transfer function
representations, stability, performance measures, root locus methods,
and frequency response methods (Nyquist, Bode).
Prerequisites: Prereqs: EN.530.343 AND EN.520.214
Instructor(s): E. Mallada Garcia
Area: Engineering.

EN.520.495. Microfabrication Laboratory. 4.0 Credits.
This laboratory course is an introduction to the principles of
microfabrication for microelectronics, sensors, MEMS, and other
synthetic microsystems that have applications in medicine and biology.
Course comprises of laboratory work and accompanying lectures that
cover silicon oxidation, aluminum evaporation, photoresist deposition,
photolithography, plating, etching, packaging, design and analysis CAD
tools, and foundry services. Seniors only or Perm. Req’d. Co-listed as
EN.580.495 & EN.530.495
Prerequisites: Students must have completed Lab Safety training prior to
registering for this class.
Instructor(s): A. Andreou; J. Wang
Area: Engineering, Natural Sciences.
EN.520.773. Advanced Topics In Microsystem Fabrication. 4.0 Credits.
Graduate-level course on topics that relate to microsystem integration of complex functional units across different physical scales from nano to micro and macro. Course comprises of laboratory work and accompanying lectures that cover silicon oxidation, aluminum evaporation, photosist deposition, photolithography, plating, etching, packaging, design and analysis CAD tools, and foundry services. Topics will include emerging fabrication technologies, micro-electromechanical systems, nanolithography, nanotechnology, soft lithography, self-assembly, and soft materials. Discussion will also include biological systems as models of microsystem integration and functional complexity. Perm. Required.
Instructor(s): J. Wang.

Civil Engineering
EN.560.201. Statics & Mechanics of Materials. 4.0 Credits.
Basic principles of classical mechanics applied to the equilibrium of particles and rigid bodies at rest, under the influence of various force systems. In addition, the following topics are studied: free body concept, analysis of simple structures, friction, centroids and centers of gravity, and moments of inertia. Includes laboratory experience.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class; AS.171.101 OR AS.171.107 OR (EN.530.123 AND EN.530.124) or instructor permission.
Instructor(s): R. Sangree
Area: Engineering.

Biomedical Engineering
EN.580.451. Cell and Tissue Engineering Lab. 3.0 Credits.
Cell and tissue engineering is a field that relies heavily on experimental techniques. This laboratory course will consist of three six experiments that will provide students with valuable hands-on experience in cell and tissue engineering. Students will learn basic cell culture procedures and specialized techniques related to faculty expertise in cell engineering, microfluidics, gene therapy, microfabrication and cell encapsulation. Experiments include the basics of cell culture techniques, gene transfection and metabolic engineering, basics of cell-substrate interactions I, cell-substrate interactions II, and cell encapsulation and gel contraction. Co-listed with EN.530.451. Senior and Graduate students only; others, instructor permission required. Fall semester only. Lab Fee: $100
Instructor(s): E. Haase
Area: Engineering, Natural Sciences.

Center for Leadership Education
EN.660.361. Engineering Business and Management. 3.0 Credits.
When engineers become working professionals, especially if they become managers, they must juggle knowledge of and tasks associated with operations, finance, ethics, strategy, team citizenship leadership and projects. While engineers’ success may depend on their direct input to the sweat of their own brow – managers’ success depends on their ability to enlist the active involvement of others: direct reports, other managers, other team members, other department employees, and those above them on the organizational chart. You will learn these concepts and skills in this course. In this course, you will learn about teamwork and people management, and gain an introduction to strategy, finance, and project management. You will practice writing concise persuasive analyses and action plans and verbally defending your ideas. Cross-listed with Mechanical Engineering.
Instructor(s): Staff
Area: Engineering.

Entrepreneurship and Management
EN.660.461. Engineering Business and Management. 3.0 Credits.
An introduction to the business and management aspects of the engineering profession, project management, prioritization of resource allocation, intellectual property protection, management of technical projects, and product/production management. Preference will be given to Mechanical Engineering students. No audits. Recommended Course Background: EN.660.105
Instructor(s): Staff
Area: Engineering.

NanoBioTechnology
http://inbt.jhu.edu

The Institute for NanoBioTechnology (INBT) at Johns Hopkins University is an exceptionally diverse, multidisciplinary team of faculty, researchers, and students uncovering new knowledge and creating innovative technologies at the interface of nanoscience, engineering, and medicine. Launched in 2006, INBT aims to revolutionize research by fostering a collaborative environment among engineers, scientist, and clinicians to pioneer new ways to solve some of the complex challenges in healthcare and the environment. The Institute brings together experts from the Bloomberg School of Public Health, School of Medicine, Whiting School of Engineering, Applied Physics Lab, and Krieger School of Arts and Sciences to fulfill their research, education, outreach, and translation initiatives. INBT collaborates with major industry partners through its Corporate Partnership Program, to help move emerging technologies from laboratory to marketplace, as well as provide a vehicle for open exchange between Hopkins researchers and students with their counterparts in industry. Their headquarters are located in 100 Croft Hall on the Homewood campus, with laboratory facilities and research teams located at several Johns Hopkins locations. Examples of INBT research include the development of new tools and techniques to probe biological systems at the molecular, cellular, and tissue levels, to provide new insight into the mechanisms of disease, and the development of new diagnostic and therapeutic platforms for improved diagnosis, prevention, and treatment of disease. These are achieved through their three research focused platforms: Engineering for Cancer Therapies, Diagnostic Tools Engineered for Early Detection, and Stem Cells and Regenerative Engineering.

INBT education programs foster the next wave of nanobiotechnology innovations. Goals include training scientists and engineers who work between the physical sciences/engineering fields and life sciences/medical fields, as well as creating an entrepreneurial environment. INBT offers a Certificate of Advanced Study in Nanobiotechnology for students who complete 13 lecture/tutorial/laboratory courses along with at least eight semesters of research from their home department. The Nanotechnology for Cancer Research program trains students to study and model cancer motility and the biophysical forces involved in metastasis. Additionally, research opportunities exist through INBT’s summer Research Experience for Undergraduates (REU) and International Research Experience for Students (IRES), both funded by NSF.

Certificate of Advance Study
The Nano-Bio Certificate of Advanced Study is recognized by the National Institutes of Health and the National Science Foundation as an innovative new approach to multidisciplinary training, integrating research and education. It combines traditional disciplinary coursework and laboratory
training with peer-to-peer teaching, co-advising and professional development.

Certificate students have the opportunity to:

- earn an accredited Certificate of Advanced Study (CAS) in Nanobiotechnology (for students who complete 13 lecture/tutorial/labatory courses along with at least eight semesters of research from their home department)
- work towards earning a PhD from participating departments such as Biomedical Engineering, Materials Science and Engineering, and Physics (application and acceptance to one of these PhD programs is required separately and in advance of an application for the CAS above). All Science and Engineering students are encouraged to apply.
- be co-advised by faculty experts from outside as well as inside your specialty
- work in a variety of lab setting and build collaborative skills

Program Requirements

Nano-Bio certificate students take two core courses and one lab course. They learn alongside other INBT students in cross-disciplinary journal clubs. To enhance their graduate experience, they attend professional development seminars and present research at the annual Nano-Bio Symposium. Students are given the opportunity to participate in research collaborations with industry partners.

- Students must complete the Nanobiotechnology certificate program course requirements. (http://inbt.jhu.edu/education/graduate/nanobi-certificate-program/courses)
- Students are expected to present their research at the annual INBT research symposium.
- Students must also complete all PhD requirements in their home departments.

Eligibility / How to Apply

Prospective students must apply to and be accepted by a participating department before pursuing this certificate program. For additional information, contact Camille Mathis at cmathis@jhu.edu.

For current course information and registration go to https://sis.jhu.edu/courses/

Courses

EN.670.495. Animation in Nanotechnology & Medicine. 3.0 Credits.
Instructor(s): M. Rietveld; P. Searson
Area: Engineering, Natural Sciences.

EN.670.497. Animation in Nanotechnology & Medicine. 3.0 Credits.
This course involves the use of animation to visualize scientific processes in nanotechnology and medicine. Animation is becoming an increasingly important tool in both research and education, especially in fields such as nanobiotechnology that involve complex processes and occur at multiple length scales. Understanding of the subject matter is gained through interaction with faculty and graduate students in research groups in the Institute for NanoBioTechnology at Hopkins. The course follows the basic animation pipeline from concept to post production.
Instructor(s): M. Rietveld.

EN.670.502. INBT Undergraduate Research. 1.0 - 3.0 Credits.
Student participation in ongoing research activities. Research is conducted under the supervision of a faculty member and often in conjunction with other members of the research group.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): Staff.

EN.670.609. Communication for Scientists and Engineers. 1.0 Credit.
Developing communications skills is a vital part of the training process to prepare scientists and engineers for successful careers. The course’s goal is to provide participants with fundamental training in science communication, focusing on how to present science to a non-expert audience. Students will reach this objective through reading, writing, and classroom activities. Conciseness and clarity are valued in scientific fields, so an emphasis will be on quality rather than quantity of writing. Topics covered generally include: communicating with your target audience, communicating on the web and social media, the editing process, communication resources, and more.
Instructor(s): G. Wadas
Writing Intensive.

EN.670.612. INBT Research Practicum. 1.0 Credit.
Research practicum for INBT Co-Op MSE students.
Instructor(s): H. Mao; S. Gerecht
Area: Engineering, Natural Sciences.

EN.670.615. Introduction to NanoBio Tutorial. 1.0 Credit.
Students in the INBT training grant programs study and present topics in nanotechnology applied to biology from the scientific literature.
Instructor(s): P. Searson.

EN.670.616. Introduction to NanoBio Tutorials II. 1.0 Credit.
Ph.D. students and postdoctoral fellows in the HHMI/IGERT/PSOC/CCNE/CNTC training programs study and present topics in nanotechnology for biology and medicine.
Instructor(s): P. Searson.

EN.670.618. Nanobio Tutorials. 1.0 Credit.
As a follow-up to Intro to NanoBio Tutorials, INBT training grant students will conduct extensive article reviews on topics related to the research being conducted in their labs (i.e., nanoparticles synthesis, quantum dots, cancer, etc.). Topics will also be related to nanotechnology applied to biology from scientific literature. Students will present literary reviews, discussions and formal presentations on articles as they relate to research or projects they wish to partake in. Recommended Course Background: EN.670.615/EN.670.616
Instructor(s): P. Searson.

EN.670.619. Fundamental Physics and Chemistry of Nanomaterials. 3.0 Credits.
This course will cover the physics and chemistry relevant to the design, synthesis, and characterization of nanoparticles. Topics include nanoparticle synthesis, functionalization, surface engineering, and applications in diagnostics and therapeutics. The properties of semiconductor quantum dots and magnetic nanoparticles will be reviewed along with techniques for nanoparticle manipulation, particle tracking, and bio-microscopy. Patterning tools including soft lithography, optical lithography, e-beam lithography, and template lithography will be discussed. Electron and scanning probe microscopy will be reviewed. Cross-listed with Materials Science & Engineering and Chemical & Biomolecular Engineering.
Instructor(s): Staff.
EN.670.621. NanoBio Laboratory. 3.0 Credits.
This course introduces students to concepts and laboratory techniques in nanobiotechnology. The focus of the laboratory is on nanoparticle carriers for drug delivery and markers for imaging. The laboratory involves the synthesis of nanoparticles using solution phase techniques and characterization by optical techniques such as dynamic light scattering and absorbance spectroscopy. Strategies for functionalization of nanoparticles are covered with focus on methods for attaching biomolecules. The basic aspects of cell culture and optical microscopy techniques will be covered. Nanoparticles functionalized with a drug or gene will be used to perform transfection experiments and compared to standard techniques.
Instructor(s): H. Mao.

EN.670.622. Advanced NanoBio Tutorials I. 1.0 Credit.
As a follow-up to NanoBio Tutorials, INBT training grant students will present scientific articles and reviews related to their current research project. Topics will also be related to nanotechnology applied to biology from scientific literature. At this time all students should be assigned a project and be able to engage participating students in their field of study. Recommended Course Background: EN.670.615, EN.670.616, EN.670.618, EN.670.619, and Introduction to NanoBio Tutorials and NanoBio Tutorials. Instructor(s): P. Searson
Area: Engineering, Natural Sciences.

EN.670.623. Advanced NanoBio Tutorials II. 1.0 Credit.
INBT training grant students only. Recommended Course Background: EN.670.615, EN.670.616, EN.670.618, and EN.670.619
Instructor(s): P. Searson
Area: Engineering, Natural Sciences.

EN.670.624. NanoBio Tutorials: Special Topics I. 1.0 Credit.
This course is to allow students pursuing a certificate in nanobiotechnology the opportunity each week to review and present on special research topics. The papers and discussions will cover the latest developments in various researches. Recommended Course Background: EN.670.615, EN.670.616, EN.670.618, EN.670.619, EN.670.622, and EN.670.623. Certificate of Advanced Studies in Nanobiotechnology only.
Instructor(s): P. Searson
Area: Engineering, Natural Sciences.

EN.670.625. NanoBio Tutorials: Special Topics II. 1.0 Credit.
This course is to allow INBT training grant fellows the opportunity each week to review and present on special research topics. The papers and discussions will cover the latest developments in various researches. INBT training grant students only. Recommended Course Background: EN.670.615, EN.670.616, EN.670.618, EN.670.619, EN.670.622, and EN.670.623.
Instructor(s): P. Searson
Area: Engineering, Natural Sciences.

EN.670.626. NanoBio Tutorials II. 1.0 Credit.
As a follow-up to Intro to NanoBio Tutorials, INBT training grant students will conduct extensive article reviews on topics related to the research being conducted in their labs (i.e., nanoparticles synthesis, quantum dots, cancer, etc.). Topics will also be related to nanotechnology applied to biology from scientific literature. Students will present literary reviews, discussions and formal presentations on articles as they relate to research or projects they wish to partake in. Recommended Course Background: EN.670.615/EN.500.615 and EN.670.616/EN.500.616
Instructor(s): P. Searson.

EN.670.642. Lab Course in Nanobiotechnology. 3.0 Credits.
This lab course is a cornerstone of the training that all NTCR fellows acquire. The main objective of the lab course is to reveal the basics of biological systems to engineers in the physical sciences and of physical systems to biologists. This lab course takes place in new state-of-the-art facilities that have been equipped with funding from the HHMI and the NSF. Lab skills learned include: (i) physical and chemical tools to characterize and manipulate the properties of surfaces and nanoparticles; (ii) synthesis, ligand-functionalization, characterization, and targeted cell intake of multi-functional nanoparticles (nanowires and quantum dots); and (iii) atomic force microscopy and quantitative fluorescence microscopy for biological and materials applications.
For fellows coming with a physics/engineering background, they learn basics of mammalian cell culture, molecular biology, cell transfection/ transformation, and blotting techniques. The course captain is Denis Wirtz (Depts. Chemical and Biomolecular Engineering, Oncology, Pathology and Director of the previously NCI-funded NTCR program and PSOC center). Recommended Course Background: EN.670.620 or EN.670.400
Instructor(s): D. Wirtz
Area: Engineering, Natural Sciences.

EN.670.643. Nanotechnology for Cancer Research Tutorial. 1.0 Credit.
Students in the NTCR training grant program study and present topics in nanotechnology applied to biology from the scientific literature. For NTCR Fellows only.
Instructor(s): D. Wirtz
Area: Engineering, Natural Sciences.

EN.670.695. Animation in Nanotechnology & Medicine. 3.0 Credits.
Instructor(s): M. Rietveld; P. Searson
Area: Engineering, Natural Sciences.

EN.670.697. Animation in Nanotechnology & Medicine. 3.0 Credits.
This course involves the use of animation to visualize scientific processes in nanotechnology and medicine. Animation is becoming an increasingly important tool in both research and education, especially in fields such as nanobiotechnology that involve complex processes and occur at multiple length scales. Understanding of the subject matter is gained through interaction with faculty and graduate students in research groups in the Institute for NanoBioTechnology at Hopkins. The course follows the basic animation pipeline from concept to post production.
Instructor(s): M. Rietveld.

EN.670.800. Independent Study: Global Engineering Innovation. 1.0 - 3.0 Credits.
This independent design course presents students with engineering needs in developing countries. Teams of students will work together to design solutions for the proposed needs that are defined in part with our global partners. Students will have to rigorously research the local community and cultural context of the proposed problems to design solutions. Prototypes will be built and some teams may test prototypes in the local community to optimize solution. Permission of Instructor.
Instructor(s): J. Elisseeff
Area: Engineering.

Robotics and Computational Sensing
https://www.lcsr.jhu.edu/Main_Page

The Laboratory for Computational Sensing and Robotics (LCSR) is one of the most technologically advanced robotics research centers worldwide, and is an international leader in the areas of medical robotics, autonomous systems, and bio-inspiration. Within Johns Hopkins, a premiere research university, the LCSR is a hub for innovative and
interdisciplinary robotics engineering, research, and development. The LCSR brings a core group of scholars and students from the Whiting School of Engineering together with researchers from the Johns Hopkins School of Medicine, the Bloomberg School of Public Health, the Krieger School of Arts and Sciences, the Johns Hopkins University Applied Physics Laboratory and the Kennedy Krieger Institute to focus on the common purpose of creating knowledge and fostering innovation.

**Undergraduate Programs**

**Minor in Robotics**

The field of robotics integrates sensing, information processing, and movement to accomplish specific tasks in the physical world. As such, it encompasses several topics, including mechanics and dynamics, kinematics, sensing, signal processing, control systems, planning, and artificial intelligence. Applications of these concepts appear in many areas including medicine, manufacturing, space exploration, disaster recovery, ordnance disposal, deep-sea navigation, home care, and home automation.

The faculty of the Laboratory for Computational Sensing and Robotics (LCSR), in collaboration with the academic departments and centers of the Whiting School of Engineering, offers a robotics minor in order to provide a structure in which undergraduate students at Johns Hopkins University can advance their knowledge in robotics while receiving recognition on their transcript for this pursuit. The minor is not “owned” by any one department, but rather it is managed by the LCSR itself. Any student from any department within the university can work toward the minor.

Robotics is fundamentally integrative and multidisciplinary. Therefore, any candidate for the robotics minor must develop a set of core skills that cut across these disciplines, as well as obtain advanced supplementary skills.


**Core Skills Include the Following**

- Robot kinematics and dynamics (R)
- Systems theory, signal processing and control (S)
- Computation and sensing (C)

Supplementary advanced skills may be obtained in specialized applications, such as space, medicine, or marine systems; or in one of the three core areas listed above.

The full minor course listing, provided below and available at [https://lcsr.jhu.edu/robotics-minor/](https://lcsr.jhu.edu/robotics-minor/), specifies which courses fulfill these requirements. Note that ALL core areas must be covered, but that ANY advanced/supplementary courses can be chosen from the list. This allows students to strike a balance between breadth and depth.

**Requirements**

Undergraduates qualify for the minor provided they have taken at least 18 credits (at the 300-level or above, with a C- or above) from an approved list of courses available below and at [https://lcsr.jhu.edu/robotics-minor/](https://lcsr.jhu.edu/robotics-minor/) with the following requirements and restrictions:

- At least 3 credits of the 18 must be a laboratory course (Lab) (at least 15 hours of laboratory time that includes working with physical hardware and/or real data).

At most 3 credits of the 18 can be an independent research or individual study with a faculty member on the list of approved faculty advisers.

- At least 6 credits must be primarily listed in a department other than the student’s home department (it is acceptable if such a course is cross-listed in the student’s home department).
- At most one course up to 3 credits (including independent research or individual study) may be taken S/U, but all other courses must be taken for a letter grade.

Graduate levels of the same course may be substituted for the undergraduate levels listed below without additional permissions.

<table>
<thead>
<tr>
<th>Course Number/Title</th>
<th>Lab</th>
<th>R</th>
<th>S</th>
<th>C</th>
<th>Sup</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.353 Control Systems</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.520.412 Machine Learning for Signal Processing</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>EN.520.414 Image Processing &amp; Analysis</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.520.415 Image Process &amp; Analysis II</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>EN.520.424 FPGA Synthesis Lab</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.520.432 Medical Imaging Systems</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>EN.520.433 Medical Image Analysis</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>EN.520.435 Digital Signal Processing</td>
<td>X</td>
<td>X</td>
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<tr>
<td>EN.520.448 Electronics Design Lab</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.520.454 Control Systems Design</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.530.343 Design and Analysis of Dynamical Systems</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.530.420 Robot Sensors/Actuators</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.530.421 Mechatronics</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.530.424 Dynamics of Robots and Spacecraft</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.530.426 Robot Devices, Kinematics, Dynamics, and Control</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.530.476 Locomotion in Mechanical and Biological Systems</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.530.486 Mechanics of Locomotion</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>EN.530.603 Applied Optimal Control</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.530.645 Kinematics</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>EN.530.678 Nonlinear Control and Planning in Robotics</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>EN.530.682 Haptic Applications</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>EN.530.707 Robot System Programming</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.550.493 Mathematical Image Analysis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.580.471 Principles of Design of BME Instrumentation</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tbody>
</table>
The minor is managed by faculty of the LCSR in collaboration with academic departments and centers of the Whiting School of Engineering. If you have suggestions / questions regarding the minor, please direct them to Prof. Noah Cowan.

**Minor in Computer Integrated Surgery**

The Whiting School of Engineering offers a minor in Computer Integrated Surgery (CIS) for full-time, undergraduate students at Johns Hopkins. The minor is particularly well suited for students interested in computer integrated surgery issues who are majoring in a variety of disciplines including biomedical engineering, computer science, computer engineering, electrical engineering, and mechanical engineering. The minor provides formal recognition of the depth and strength of a student's knowledge of the concepts fundamental to CIS beyond the minimal requirements of his/her major.

In order to minor in CIS, a student will require a minor adviser from the Engineering Research Center in Computer Integrated Surgical Systems and Technology (CISST ERC) in the Laboratory for Computational Sensing and Robotics. Current faculty members available as advisers include Professors Russell Taylor (CS), Greg Hager (CS), Jerry Prince (ECE), Ralph Etienne-Cummings (ECE), Louis Whitcomb (ME), Noah Cowan (ME), Marin Kobilarov (ME), Peter Kazanzides (CS), Iulian Iordachita (ME), and Emad Boctor (Radiology).

To satisfy the requirements for the minor in CIS, a student must have a fundamental background in computer programming and computer science, sufficient mathematical background, and also take a minimum of six courses (with a total of at least 18 credits, earning at least a C- in each course) directly related to the concepts relevant to CIS. These six CIS courses must include two fundamental CIS core courses, which provide the student with the fundamental basis for CIS, and four approved upper-level courses (300-level or above) to allow the student to pursue an advanced CIS topic in depth. The additional four upper-level courses must include at least one course designated as an "imaging" course or one course designated as a "robotics" course, as discussed below.

Graduate levels of the same course may be substituted for the undergraduate levels listed below without additional permissions.

### Required Fundamental Computer Science Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.601.226</td>
<td>Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.107</td>
<td>Introductory Programming in Java</td>
<td>3</td>
</tr>
</tbody>
</table>

Or equivalent experience determined by your CIS minor adviser.

### Required Fundamental Mathematics Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.110.108</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.106</td>
<td>Calculus I (Biology and Social Sciences)</td>
<td></td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.107</td>
<td>Calculus II (For Biological and Social Science)</td>
<td></td>
</tr>
<tr>
<td>AS.110.202</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.211</td>
<td>Honors Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>or AS.110.201</td>
<td>Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>or AS.110.212</td>
<td>Honors Linear Algebra</td>
<td></td>
</tr>
</tbody>
</table>

Each math requirement listed above may be satisfied by one of the specific courses listed, or by an equivalent course as determined by CIS advisor.
Required Fundamental Computer Integrated Surgery Courses

- EN.601.455 Computer Integrated Surgery I
- A design course in CIS. Either EN.601.456 Computer Integrated Surgery II or a design course in biomedical engineering, electrical and computer engineering, or mechanical engineering with substantial CIS content approved by the student’s faculty adviser in the CIS minor.

Required Four Other Courses Related to CIS

Students must also complete at least four other courses related to CIS. Of these, AT LEAST ONE must be in EITHER the Imaging Subgroup or the Robotics Subgroup.

Imaging

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.414</td>
<td>Image Processing &amp; Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.432/</td>
<td>Medical Imaging Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.472</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.520.433</td>
<td>Medical Image Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.461</td>
<td>Computer Vision</td>
<td>3</td>
</tr>
</tbody>
</table>

Robotics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.530.420</td>
<td>Robot Sensors/Actuators</td>
<td>4</td>
</tr>
<tr>
<td>EN.530.421</td>
<td>Mechatronics</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.603</td>
<td>Applied Optimal Control</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.646</td>
<td>Robot Devices, Kinematics, Dynamics, and Control</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.463</td>
<td>Algorithms for Sensor-Based Robotics</td>
<td>3</td>
</tr>
</tbody>
</table>

Other

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.520.448</td>
<td>Electronics Design Lab</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.445</td>
<td>Introduction to Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>EN.580.471</td>
<td>Principles of Design of BME Instrumentation</td>
<td>4</td>
</tr>
<tr>
<td>EN.601.454</td>
<td>Augmented Reality</td>
<td>3</td>
</tr>
<tr>
<td>EN.601.476</td>
<td>Machine Learning: Data to Models</td>
<td>3</td>
</tr>
</tbody>
</table>

Please visit http://lcsr.jhu.edu/computer-integrated-surgery-minor/ for current course listings.

Graduate Program

Robotics M.S.E. Program

For complete and up-to-date M.S.E. information, visit https://lcsr.jhu.edu/mse.

The Master of Science in Engineering in Robotics (Robotics MSE) program at Johns Hopkins University is designed to advance interdisciplinary robotics knowledge in students coming from a wide variety of engineering, scientific, and mathematical backgrounds.

Johns Hopkins University recognizes the growing need in industry for engineers with the broad multi-disciplinary training and fundamental knowledge needed to develop and deploy advanced robotics systems that function effectively in the real world.

Johns Hopkins University’s broad interdisciplinary approach to robotics research makes it uniquely situated to offer such a comprehensive program. The Laboratory for Computational Sensing and Robotics (LCSR), with its reputation as one of the top robotics research sites in the world, particularly in the area of medical robotics, is pleased to offer this MSE in Robotics.

Program Goals

- To provide students with multi-disciplinary engineering education and training that will enable them to develop and deploy innovative advanced robotics systems that function effectively in real-world applications.
- To develop students’ ability to relate individual technical and design elements to the functioning of complete engineered robotic systems.
- To develop students’ ability to work effectively within and to lead multi-disciplinary teams.
- To provide students with a basis for life-long learning and professional growth.

Application Requirements for the M.S.E. in Robotics degree

- Bachelor’s degree in engineering, science, or math. (Or demonstrated knowledge or accomplishment in these fields)
- Statement of Purpose – in your short statement of purpose please take a couple of sentences to explain/answer the following:
  - Why are you interested in doing an MSE in Robotics? No need to over-think this: it is fine if it is as simple as wanting to get a job in this field!
  - Are you interested in a specific Robotics Track? See the Robotics MSE website for more information on tracks.
- Transcript
- Graduate Record Examination (GRE). Current JHU students may request that this requirement be waived. Such requests will be judged on a case-by-case basis.
- IELTS or TOEFL for international applicants. Please note: while the Robotics program accepts both the TOEFL and the IELTS tests, we strongly prefer the IELTS.
- Three letters of reference
- $75.00 Application fee
- The Office of Graduate Admissions and Enrollment strongly recommends you submit a professional evaluation from one of the recommended resources (more information here http://grad.jhu.edu/apply/international-students/) for any academic work completed outside the USA. At this time, however, LCSR does not require the evaluation for the Robotics MSE application package.

To apply, please fill out the application and submit the required documents here (https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=jhu-grad).

In making its final decisions, the Admissions Committee will consider the combination of professional knowledge, academic excellence, letters of reference, and the statement of purpose, as well as GRE, TOEFL, and IELTS scores of the applicants.

M.S.E. Program Prerequisites

Math and Physics Proficiency Prerequisites

Proficiency in undergraduate mathematics and physics is expected for all M.S.E. students in the robotics program.

This includes proficiency in:

- Multivariable integral and differential calculus;
- Linear algebra;
- Ordinary differential equations;
- Physics – undergraduate calculus-based mechanics, electricity, and magnetism;
• Probability and statistics.

Proficiency will be assumed in the prerequisites for the core courses.

Computing Proficiency Prerequisites

Proficiency in computer programming is expected for all M.S.E. students in the robotics program.

This includes proficiency in:

• Basic numerical methods using existing programming environments;
• The ability to write well-structured and documented programs in a standard programming language such as C++, Java, or MATLAB.

M.S.E. Degree Requirements

All incoming M.S.E. students will be assigned an M.S.E. Academic Advisor.

• Course Requirements:
  • **Course Option:** 10 credit-bearing courses that total at least 30 credit-hours.
  • **Essay Option:** 8 credit-bearing courses that total at least 24 credit-hours and a Master’s Essay supervised by a WSE faculty member who has been approved by the Robotics M.S.E. Curriculum Committee to serve as a faculty advisor.

At least 6 of these courses must be at the graduate level as defined by the offering department/center. All courses counted toward the MSE degree requirements must be at the 400 level or above. Any dual listed courses (i.e. listed at both the 600 and 400 level) must be taken at the 600 level. All courses counting towards the foundation, track, or elective requirements must be for a letter grade (i.e. no pass/fail). Any exceptions must be approved in writing by your academic advisor and the LCSR Education Director. Non-credit and one-credit courses such as the weekly seminar courses offered by LCSR may not count toward this course requirement.

• **Foundation Course Requirements:** Two core courses and a weekly seminar course.

• **Track Course Requirement:** Four courses fulfilling one of the following track requirements (see website for track course listings):
  • Medical Robotics and Computer Integrated Surgical Systems (has special track requirements, please see website)
  • Perception and Cognitive Systems
  • Automation Science and Engineering
  • Control and Dynamical Systems
  • BioRobotics
  • General Robotics

Courses counted toward the track requirement may not be used to satisfy the elective requirement.

• **Elective Course Requirement:** Four courses, or two courses and a M.S.E. Essay, fulfilling the elective requirement. Courses may be any engineering or quantitative (designated E or Q in the course catalog) course, subject to the degree requirement limitations, as approved by the student’s M.S.E. academic adviser. Courses counted toward the elective requirement may not be used to satisfy the track requirements.

• **Academic Ethics:** online tutorial required for all incoming M.S.E. students (EN.500.603)

• AS.360.625 Responsible Conduct of Research (online): Online tutorial required for all incoming MSE students.
• AS.360.625 Responsible Conduct of Research (in-person): may be required for certain research projects. More information: (http://eng.jhu.edu/wse/page/conduct-of-research-training).
• EN.500.601 Research Laboratory Safety: required for all incoming M.S.E. students.

• **Course Grade Requirement:** A grade of D or F or second C+ grade results in probation. A second D or F, or a third C+, C, or C- grade typically results in termination from the program.

• **Transfer Courses:** Standard WSE policy and limitations on M.S.E. transfer credits apply (http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/). In addition, use of each transfer course toward satisfaction of a specific Robotics M.S.E. degree requirement must be approved in writing by both the student’s faculty advisor and the Robotics M.S.E. Curriculum Committee.

• **Double Counting:** Standard WSE policy and limitations on double counting apply (http://engineering.jhu.edu/graduate-studies/academic-policies-procedures-graduate/).

• **Duration:** Students must complete degree within 5 years from matriculation in the M.S.E. program. An university-approved leave of absence does not count toward this limit.

• **Graduate Research Courses:** No more than one 1-semester or 3 credits of a graduate research course (e.g., EN.530.600 MSE Graduate Research) may be counted toward degree requirements.

• **WSE Engineering for Professionals (EP) Courses** may count toward the M.S.E. degree elective requirements. All EP courses must be approved in writing by the student’s faculty advisor.

• **Residency Requirement:** Minimum residency of two full-time academic semesters at WSE (note that summer and intersession terms do not count toward this requirement).

For complete and up-to-date M.S.E. information, visit https://lcsr.jhu.edu/mse/

Courses

**AS.110.106. Calculus I (Biology and Social Sciences). 4.0 Credits.** Differential and integral calculus. Includes analytic geometry, functions, limits, integrals and derivatives, introduction to differential equations, functions of several variables, linear systems, applications for systems of linear differential equations, probability distributions. Many applications to the biological and social sciences will be discussed.

Instructor(s): B. Smithling; X. Zheng

Area: Quantitative and Mathematical Sciences.

**AS.110.107. Calculus II (For Biological and Social Science). 4.0 Credits.** Differential and integral Calculus. Includes analytic geometry, functions, limits, integrals and derivatives, introduction to differential equations, functions of several variables, linear systems, applications for systems of linear differential equations, probability distributions. Applications to the biological and social sciences will be discussed, and the courses are designed to meet the needs of students in these disciplines.

Instructor(s): L. Sun

Area: Quantitative and Mathematical Sciences.
AS.110.108. Calculus I. 4.0 Credits.
Differential and integral calculus. Includes analytic geometry, functions, limits, integrals and derivatives, polar coordinates, parametric equations, Taylor’s theorem and applications, infinite sequences and series. Some applications to the physical sciences and engineering will be discussed, and the courses are designed to meet the needs of students in these disciplines.
Instructor(s): Staff
Area: Quantitative and Mathematical Sciences.

AS.110.109. Calculus II (For Physical Sciences and Engineering). 4.0 Credits.
Differential and integral calculus. Includes analytic geometry, functions, limits, integrals and derivatives, polar coordinates, parametric equations, Taylor’s theorem and applications, infinite sequences and series. Some applications to the physical sciences and engineering will be discussed, and the courses are designed to meet the needs of students in these disciplines.
Instructor(s): W. Wilson
Area: Quantitative and Mathematical Sciences.

AS.110.202. Calculus III. 4.0 Credits.
Calculus of functions of more than one variable: partial derivatives, and applications; multiple integrals, line and surface integrals; Green's Theorem, Stokes' Theorem, and Gauss' Divergence Theorem.
Prerequisites: Grade of C- or better in AS.110.201 OR AS.110.212 OR AS.110.302, or a 5 or better on the AP BC exam.
Instructor(s): X. Zheng
Area: Quantitative and Mathematical Sciences.

AS.110.211. Honors Multivariable Calculus. 4.0 Credits.
This course includes the material in AS.110.202 with some additional applications and theory. Recommended for mathematically able students majoring in physical science, engineering, or especially mathematics. AS.110.211-AS.110.212 used to be an integrated yearlong course, but now the two are independent courses and can be taken in either order.
Prerequisites: Grade of C- or better in AS.110.201 OR AS.110.212
Instructor(s): E. Riehl
Area: Quantitative and Mathematical Sciences.

AS.110.212. Honors Linear Algebra. 4.0 Credits.
This course includes the material in AS.110.201 with additional applications and theory, and is recommended only for mathematically able students majoring in physical science, engineering, or mathematics who are interested in a proof-based version of linear algebra. This course can serve as an Introduction to Proofs (IP) course. Prerequisites: Grade of B+ or better in 110.107 or 110.109 or 110.113, or a 5 on the AP BC exam.
Area: Quantitative and Mathematical Sciences.
Prerequisites: Grade of B+ or better in AS.110.107 or AS.110.109 or AS.110.113 or AS.110.202, or AS.110.302, or a 5 on the AP BC exam.
Instructor(s): W. Wilson
Area: Quantitative and Mathematical Sciences.

EN.500.745. Seminar in Computational Sensing and Robotics. 1.0 Credit.
Seminar series in robotics. Topics include: Medical robotics, including computer-integrated surgical systems and image-guided intervention. Sensor based robotics, including computer vision and biomedical image analysis. Algorithmic robotics, robot control and machine learning. Autonomous robotics for monitoring, exploration and manipulation with applications in home, environmental (land, sea, space), and defense areas. Biorobotics and neuromechanics, including devices, algorithms and approaches to robotics inspired by principles in biomechanics and neuroscience. Human-machine systems, including haptic and visual feedback, human perception, cognition and decision making, and human-machine collaborative systems. Cross-listed Mechanical Engineering, Computer Science, Electrical and Computer Engineering, and Biomedical Engineering.
Instructor(s): L. Whitcomb; P. Kazanzides.

EN.520.353. Control Systems. 3.0 Credits.
Modeling, analysis, and an introduction to design for feedback control systems. Topics include state equation and transfer function representations, stability, performance measures, root locus methods, and frequency response methods (Nyquist, Bode).
Prerequisites: Prereqs: EN.530.343 AND EN.520.214
Instructor(s): E. Mallada Garcia
Area: Engineering.

EN.520.413. Control Systems II. 3.0 Credits.
This course covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by humans and computers. Topics include elements of visual perception, sampling and quantization, image transforms, image enhancement, color image processing, image restoration, image segmentation, and multiresolution image representation. Laboratory exercises demonstrate key aspects of the course.
Prerequisites: EN.520.214.;Students may earn credit for EN.520.614 or EN.520.414, but not both.
Instructor(s): J. Goutsias
Area: Engineering.

EN.520.414. Image Processing & Analysis. 3.0 Credits.
The course covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by humans and computers. Topics include elements of visual perception, sampling and quantization, image transforms, image enhancement, color image processing, image restoration, image segmentation, and multiresolution image representation. Laboratory exercises demonstrate key aspects of the course.
Prerequisites: EN.520.214.;Students may earn credit for EN.520.614 or EN.520.414, but not both.
Instructor(s): J. Goutsias
Area: Engineering.

EN.520.415. Image Process & Analysis II. 3.0 Credits.
This course covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by morphological image processing and analysis, image representation and description, image recognition and interpretation.
Prerequisites: Students may earn credit for EN.520.615 or EN.520.415, but not both.;EN.520.414
Instructor(s): J. Goutsias
Area: Engineering.
EN.520.427. Product Design Lab. 3.0 Credits.
This project-based course is designed to help students learn how to
turn their ideas into commercial products. In the first half of the course,
emphasis will be placed on the product development process: student
teams will gradually build up a complete "contract book" including
a mission statement, competitive analysis, patent review, product
specifications, system schematics, economic analysis, development
schedule, etc. In the second half of the course, each team will be
expected to implement its design and demonstrate a prototype of their
product's core functionality. At the end of the semester, a final written
report will be submitted in the form of a utility patent. Students are
encouraged to take this course in conjunction with Electronic Design
Lab (ECE 520.448) in the Spring semester and leverage the groundwork
developed here to enable production of a fully functional and marketable
prototype by the end of the academic year.
Instructor(s): I. Gannot; S. Ramesh
Area: Engineering.

EN.520.432. Medical Imaging Systems. 3.0 Credits.
This course provides students with an introduction to the physics,
instrumentation, and signal processing methods used in general
radiography, X-ray computed tomography, ultrasound imaging, magnetic
resonance imaging, and nuclear medicine. The primary focus is on the
methods required to reconstruct images within each modality from
a signals and systems perspective, with emphasis on the resolution,
contrast, and signal-to-noise ratio of the resulting images. Students will
Additionally engage in hands-on activities to reconstruct medical images
from raw data.
Prerequisites: Student may earn credit for EN.520.632 or EN.520.432, but
not both.;EN.580.222 OR EN.520.214
Instructor(s): M. Bell
Area: Engineering.

EN.520.433. Medical Image Analysis. 3.0 Credits.
This course covers the principles and algorithms used in the processing
and analysis of medical images. Topics include, interpolation,
registration, enhancement, feature extraction, classification,
segmentation, quantification, shape analysis, motion estimation,
and visualization. Analysis of both anatomical and functional images will
be studied and images from the most common medical imaging modalities
will be used. Projects and assignments will provide students experience
working with actual medical imaging data.
Prerequisites: EN.550.310 OR EN.550.311 OR EN.560.348
Instructor(s): J. Prince
Area: Engineering.

EN.520.435. Digital Signal Processing. 3.0 Credits.
Methods for processing discrete-time signals. Topics include signal
and system representations, z- transforms, sampling, discrete Fourier
transforms, fast Fourier transforms, digital filters.
Prerequisites: EN.520.214.;Students may receive credit for EN.520.435
or EN.520.635, but not both.
Instructor(s): H. Weinert
Area: Engineering.

EN.520.445. Control Systems Design. 3.0 Credits.
Classical and modern control systems design methods. Topics include
formulation of design specifications, classical design of compensators,
state variable and observer based feedback. Computers are used
extensively for design, and laboratory experiments are included.
Prerequisites: Students may earn credit for EN.520.654 or EN.520.454,
but not both.
Instructor(s): P. Iglesias
Area: Engineering.

EN.520.448. Electronics Design Lab. 3.0 Credits.
An advanced laboratory course in which teams of students design,
build, test and document application specific information processing
microsystems. Semester long projects range from sensors/actuators,
mixed signal electronics, embedded microcomputers, algorithms and
robotics systems design. Demonstration and documentation of projects
are important aspects of the evaluation process. Recommended:
EN.600.333, EN.600.334, EN.520.214, EN.520.216, EN.520.349,
EN.520.372, EN.520.490 or EN.520.491.
Prerequisites: (EN.520.230 OR EN.520.213) AND (AS.110.108 AND
AS.110.109 AND AS.171.101) AND EN.520.142
Instructor(s): P. Julian.

EN.520.454. Control Systems Design. 3.0 Credits.
Classical and modern control systems design methods. Topics include
formulation of design specifications, classical design of compensators,
state variable and observer based feedback. Computers are used
extensively for design, and laboratory experiments are included.
Prerequisites: Students may earn credit for EN.520.654 or EN.520.454,
but not both.
Instructor(s): P. Iglesias
Area: Engineering.

EN.520.483. Bio-Photonics Laboratory. 3.0 Credits.
This laboratory course involves designing a set of basic optical
experiments to characterize and understand the optical properties of
biological materials. The course is designed to introduce students to
the basic optical techniques used in medicine, biology, chemistry and
material sciences.
Prerequisites: Students must have completed Lab Safety training prior to
registering for this class.
Instructor(s): J. Kang; S. Ramesh.

EN.520.491. CAD Design of Digital VLSI Systems I (Juniors/Seniors). 3.0
Credits.
Juniors and Seniors Only.
Prerequisites: Student may take EN.520.491 or EN.520.691, but not
both.;AS.110.109 AND AS.171.102 AND EN.520.142 AND EN.520.142
AND ( EN.520.230 OR ( EN.520.213 AND EN.520.345 )
Instructor(s): R. Etienne Cummings
Area: Engineering.

EN.530.343. Design and Analysis of Dynamical Systems. 3.0 Credits.
Modeling and analysis of damped and undamped, forced and free
vibrations in single and multiple degree-of-freedom linear dynamical
systems. Introduction to stability and control of linear dynamical
systems.
Prerequisites: Prereg: (110.108 and 110.109 and (110.202 or 110.211)
and (550.291) or (110.201 and 110.302) or (110.201 and 110.306)),
and C- or better or concurrent enrollment in 530.202 or 560.202. MechE
Majors must also have taken 530.241; Students must have completed Lab
Safety training prior to registering for this class.
Instructor(s): L. Whitcomb; S. Marra
Area: Engineering.

EN.520.444. Electronics Design Lab. 3.0 Credits.
EN.530.414. Computer-Aided Design. 3.0 Credits.
The course outlines a modern design platform for 3D modeling, analysis, simulation, and manufacturing of mechanical systems using the "Pro/E" package by PTC. The package includes the following components: • Pro/ENGINEER: is the kernel of the design process, spanning the entire product development, from creative concept through detailed product definition to serviceability. • Pro/MECHANICA: is the main analysis and simulation component for kinematic, dynamic, structural, thermal and durability performance. • Pro/NC: is a numeric-control manufacturing package. This component provides NC programming capabilities and tool libraries. It creates programs for a large variety of CNC machine tools.
Instructor(s): D. Stoianovici
Area: Engineering.

EN.530.420. Robot Sensors/Actuators. 4.0 Credits.
Introduction to modeling and use of actuators and sensors in mechatronic design. Topics include electric motors, solenoids, micro-actuators, position sensors, and proximity sensors.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): D. Kraemer; N. Cowan
Area: Engineering.

EN.530.421. Mechatronics. 3.0 Credits.
Students from various engineering disciplines are divided into groups of two to three students. These groups each develop a microprocessor-controlled electromechanical device, such as a mobile robot. The devices compete against each other in a final design competition. Topics for competition vary from year to year. Class instruction includes fundamentals of mechanism kinematics, creativity in the design process, an overview of motors and sensors, and interfacing and programming microprocessors.
Prerequisites: EN.530.420 or EN.520.240 or permission of instructor; Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): C. Rizk
Area: Engineering.

EN.530.424. Dynamics of Robots and Spacecraft. 3.0 Credits.
An introduction to Lagrangian mechanics with application to robot and spacecraft dynamics and control. Topics include rigid body kinematics, efficient formulation of equations of motion, stability theory, and Hamilton's principle.
Instructor(s): G. Chirikjian; J. Kim
Area: Engineering.

EN.530.420. Robot Sensors/Actuators. 4.0 Credits.
Introduction to modeling and use of actuators and sensors in mechatronic design. Topics include electric motors, solenoids, micro-actuators, position sensors, and proximity sensors.
Prerequisites: Students must have completed Lab Safety training prior to registering for this class. To access the tutorial, login to myLearning and enter 458083 in the Search box to locate the appropriate module.; ((AS.171.101 AND AS.171.102) OR (AS.171.107 AND AS.171.108) OR (EN.530.103 AND EN.530.104) OR (EN.530.123 AND EN.530.124)) AND (AS.110.106 OR AS.110.108) AND AS.110.109 AND (AS.110.202 OR AS.110.211) AND (EN.530.291 OR AS.110.302) AND (EN.530.241 OR EN.520.230 OR (EN.520.132 AND EN.520.345))
Instructor(s): D. Kraemer; N. Cowan
Area: Engineering.

EN.530.495. Microfabrication Laboratory. 4.0 Credits.
This laboratory course is an introduction to the principles of microfabrication for microelectronics, sensors, MEMS, and other synthetic microsystems that have applications in medicine and biology. Course comprises of laboratory work and accompanying lectures that cover silicon oxidation, aluminum evaporation, photoresist deposition, photolithography, plating, etching, packaging, design and analysis CAD tools, and foundry services. Seniors only or Permission Required.
Instructor(s): J. Wang
Area: Engineering, Natural Sciences.

EN.530.646. Robot Devices, Kinematics, Dynamics, and Control. 4.0 Credits.
Graduate-level introduction to the mechanics of robotic systems with emphasis on the mathematical tools for kinematics and dynamics of robot arms and mobile robots. Topics include the geometry and mathematical representation of rigid body motion, forward and inverse kinematics of articulated mechanical arms, trajectory generation, manipulator dynamics, actuation, and design issues, manipulator control, and additional special topics. Recommended course background: multivariable integral and differential calculus, classical physics, linear algebra, ordinary differential equations. Programming: Knowledge of the Matlab programming language including data input/output, 1-D and 2-D arrays, and user-defined function calls. Students with experience with these language elements in other programming languages (C, C++, Python, Java, etc.) should be able to self-tutor themselves in the Matlab language as part of the programming exercises.
Instructor(s): J. Kim

EN.530.653. Advanced Systems Modeling. 3.0 Credits.
This course covers the following topics at an advanced level: Newton's laws and kinematics of systems of particles and rigid bodies; Lagrange's equations for single- and multi-degree-of-freedom systems composed of point masses; normal mode analysis and forced linear systems with damping, the matrix exponential and stability theory for linear systems; nonlinear equations of motion: structure, passivity, PD control, noise models and stochastic equations of motion; manipulator dynamics: Newton-Euler formulation, Lagrange, Kane's formulation of dynamics, computing torques with O(n) recursive manipulator dynamics: Luh-Walker-Paul, Hollerbach, O(n) dynamic simulation: Rodrigues-Jain-Kreutz, Saha, Fixman. There is also an individual course project that each student must do which related the topics of this course to his or her research.
Instructor(s): G. Chirikjian.
EN.530.661. Applied Mathematics for Engineering. 3.0 Credits.
This course presents a broad survey of the basic mathematical methods used in the solution of ordinary and partial differential equations: linear algebra, vector calculus, power series, Fourier series, separation of variables, integral transforms.
Instructor(s): M. HilPERT.

EN.530.767. Locomotion II: Dynamics. 3.0 Credits.
Graduate course on mechanics and control in locomotion. Topics include modeling (e.g. Lagrangian mechanics), dynamical systems theory (nonholonomic systems, limit-cycle behavior, Poincaré analysis, and Floquet theory), design (control synthesis, mechanical design), and data-driven modeling from animal locomotor control experiments.
Prerequisites: A graduate course in linear systems theory (e.g. EN.520.601). Suggested background (not required): 530.475/675.
Instructor(s): N. Cowan.

EN.580.471. Principles of Design of BME Instrumentation. 4.0 Credits.
This core design course will cover lectures and hands-on labs. The material covered will include fundamentals of biomedical sensors and instrumentation, FDA regulations, designing with electronics, biopotentials and ECG amplifier design, recording from heart, muscle, brain, etc., diagnostic and therapeutic devices (including pacemakers and defibrillators), applications in prosthetics and rehabilitation, and safety. The course includes extensive laboratory work involving circuits, electronics, sensor design and interface, and building complete biomedical instrumentation. The students will also carry out design challenge projects, individually or in teams (examples include “smart cane for blind,” “computer interface for quadriplegic”). Students satisfying the design requirement must also register for EN.580.571. Lab Fee: $150. Recommended Course Background: EN.520.345
Prerequisites: Students must have completed Lab Safety training prior to registering for this class.
Instructor(s): N. Thakor
Area: Engineering, Natural Sciences.

EN.553.493. Mathematical Image Analysis. 3.0 Credits.
This course gives an overview of various mathematical methods related to several problems encountered in image processing and analysis, and presents numerical schemes to address them. It will focus on problems like image denoising and deblurring, contrast enhancement, segmentation and registration. The different mathematical concepts shall be introduced during the course; they include in particular functional spaces such as Sobolev and BV, Fourier and wavelet transforms, as well as some notions from convex optimization and numerical analysis. Most of such methods will be illustrated with algorithms and simulations on discrete images, using MATLAB. Prerequisites: linear algebra, multivariate calculus, basic programming in MATLAB. Recommended Course Background: Real analysis
Prerequisites: (AS.110.202 OR AS.110.211 ) AND (EN.550.291 OR AS.110.201 OR AS.110.212 );Students may receive credit for EN.550.493/EN.553.493 or EN.553.693, but not both.
Instructor(s): P. Escande
Area: Engineering, Quantitative and Mathematical Sciences.

EN.530.676. Nonlinear Optimization II. 3.0 Credits.
This course considers algorithms for solving various nonlinear optimization problems and, in parallel, develops the supporting theory. The primary focus will be on constrained optimization problems. Topics for the course will include: necessary and sufficient optimality conditions for constrained optimization; projected-gradient and two-phase accelerated subspace methods for bound-constrained optimization; simplex and interior-point methods for linear programming; duality theory; and penalty, augmented Lagrangian, sequential quadratic programming, and interior-point methods for general nonlinear programming. In addition, we will consider the Alternating Direction Method of Multipliers (ADMM), which is applicable to a huge range of problems including sparse inverse covariance estimation, consensus, and compressed sensing. Recommended Course Background: Multivariable Calculus, Linear Algebra, Real Analysis such as AS.110.405.
Instructor(s): D. Robinson.

EN.580.472. Medical Imaging Systems. 3.0 Credits.
An introduction to the physics, instrumentation, and signal processing methods used in general radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images. Cross-listed with Neuroscience and Electrical and Computer Engineering (EN.520.432).
Prerequisites: EN.580.222 OR EN.520.214
Instructor(s): M. Bell
Area: Engineering.

EN.601.464. Artificial Intelligence. 3.0 Credits.
The class is recommended for all scientists and engineers with a genuine curiosity about the fundamental obstacles to getting machines to perform tasks such as learning, planning and prediction. Materials will be primarily based on the popular textbook, Artificial Intelligence: A Modern Approach. Strong programming skills are expected, as well as basic familiarity with probability. For students intending to also take courses in Machine Learning (e.g., 601.475/675, 601.476/676), they may find it beneficial to take this course first, or concurrently. [Applications]
Prerequisites: EN.600.226;Students may receive credit for only one of EN.600.335, EN.600.435, EN.601.464, EN.601.664.
Instructor(s): B. Van Durme
Area: Engineering.
EN.601.220. Intermediate Programming. 4.0 Credits.
This course teaches intermediate to advanced programming, using C and C++. (Prior knowledge of these languages is not expected.) We will cover low-level programming techniques, as well as object-oriented class design, and the use of class libraries. Specific topics include pointers, dynamic memory allocation, polymorphism, overloading, inheritance, templates, collections, exceptions, and others as time permits. Students are expected to learn syntax and some language specific features independently. Course work involves significant programming projects in both languages.
Prerequisites: AP Computer Science, or C+ or better in EN.600.107/EN.601.107 OR EN.580.200 OR EN.600.112.
Instructor(s): J. Selinski; M. Darvish Darab; S. More
Area: Engineering.

EN.601.226. Data Structures. 4.0 Credits.
This course covers the design and implementation of data structures including arrays, stacks, queues, linked lists, binary trees, heaps, balanced trees (e.g. 2-3 trees, AVL-trees) and graphs. Other topics include sorting, hashing, memory allocation, and garbage collection. Course work involves both written homework and Java programming assignments.
Prerequisites: EN.600.120 OR EN.601.220 OR EN.600.107 OR EN.601.107 or equivalent with C+ or better grades.
Instructor(s): M. Schatz
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.455. Computer Integrated Surgery I. 4.0 Credits.
This course focuses on computer-based techniques, systems, and applications exploiting quantitative information from medical images and sensors to assist clinicians in all phases of treatment from diagnosis to preoperative planning, execution, and follow-up. It emphasizes the relationship between problem definition, computer-based technology, and clinical application and includes a number of guest lectures given by surgeons and other experts on requirements and opportunities in particular clinical areas. Recommended Course Background: EN.601.220, EN.601.457, EN.601.461, image processing.
Prerequisites: EN.600.226 AND (AS.110.201 OR AS.110.212) or permission of the instructor; Students may receive credit for only one of EN.600.445, EN.600.645, EN.601.455, EN.601.655.
Instructor(s): R. Taylor
Area: Engineering.

EN.601.456. Computer Integrated Surgery II. 3.0 Credits.
This weekly lecture/seminar course addresses similar material to EN.601.445, but covers selected topics in greater depth. In addition to material covered in lectures/seminars by the instructor and other faculty, students are expected to read and provide critical analysis/presentations of selected papers in recitation sessions. Students taking this course are required to undertake and report on a significant term project under the supervision of the instructor and clinical end users. Typically, this project is an extension of the term project from EN.601.445, although it does not have to be. Grades are based both on the project and on classroom recitations. Students wishing to attend the weekly lectures as a 1-credit seminar should sign up for EN.600.452.
Prerequisites: EN.600.445 or EN.600.645 or permission; Students may receive credit for only one of EN.600.446, EN.600.646, EN.601.456, EN.601.656.
Instructor(s): R. Taylor
Area: Engineering.

EN.601.461. Computer Vision. 3.0 Credits.
This course gives an overview of fundamental methods in computer vision from a computational perspective. Methods studied include: camera systems and their modeling, computation of 3-D geometry from binocular stereo, motion, and photometric stereo; and object recognition. Edge detection and color perception are covered as well. Elements of machine vision and biological vision are also included.
Prerequisites: intro programming, linear algebra, and prob/stat.
Prerequisites: Students may receive credit for only one of EN.600.361, EN.600.461, EN.600.661, EN.601.461, EN.601.661.
Area: Engineering, Quantitative and Mathematical Sciences.

EN.601.475. Machine Learning. 3.0 Credits.
Machine learning is subfield of computer science and artificial intelligence, whose goal is to develop computational systems, methods, and algorithms that can learn from data to improve their performance. This course introduces the foundational concepts of modern Machine Learning, including core principles, popular algorithms and modeling platforms. This will include both supervised learning, which includes popular algorithms like SVMs, logistic regression, boosting and deep learning, as well as unsupervised learning frameworks, which include Expectation Maximization and graphical models. Homework assignments include a heavy programming components, requiring students to implement several machine learning algorithms in a common learning framework. Additionally, analytical homework questions will explore various machine learning concepts, building on the pre-requisites that include probability, linear algebra, multi-variate calculus and basic optimization. Students in the course will develop a learning system for a final project.
Prerequisites: EN.600.107 OR EN.601.107 OR EN.600.120 OR EN.601.220 OR EN.600.226/EN.601.226 OR EN.580.200 OR EN.500.200 OR AS.250.205 OR EN.601.107 OR EN.500.112 OR AP Computer Science; Students may receive credit for only one of EN.600.475, EN.601.475, EN.601.675.
Instructor(s): M. Dredze
Area: Engineering.

EN.601.763. Algorithms for Sensor-Based Robotics. 3.0 Credits.
Similar material as EN.601.463 and EN.601.663, covered in more depth. [Applications] Recommended course background: EN.601.226, AS.110.106, probability and statistics.
Prerequisites: Students may only earn credit for one of the following: EN.600.336, EN.600.436/EN.601.463, EN.600.663, or EN.600.636/EN.601.763.
Instructor(s): S. Leonard.
EN.601.656. Computer Integrated Surgery II. 3.0 Credits.
Same material as EN.601.456, for graduate students. This weekly lecture/seminar course addresses similar material to EN.601.445, but covers selected topics in greater depth. In addition to material covered in lectures/seminars by the instructor and other faculty, students are expected to read and prepare critical analysis/presentations of selected papers in recitation sessions. Students taking this course are required to undertake and report on a significant term project under the supervision of the instructor and clinical end users. Typically, this project is an extension of the term project from EN.601.445, although it does not have to be. Grades are based both on the project and on classroom recitations. Students wishing to attend the weekly lectures as a 1-credit seminar should sign up for EN.600.452. [Applications]
Prerequisites: EN.600.445 OR EN.600.645 OR PERMISSION OF INSTRUCTOR; Students may receive credit for only one of EN.600.446, EN.600.646, EN.601.456, EN.601.656.
Instructor(s): R. Taylor.

EN.601.760. FFT in Graphics & Vision. 3.0 Credits.
In this course, we will study the Fourier Transform from the perspective of representation theory. We will begin by considering the standard transform defined by the commutative group of rotations in 2D and translations in two- and three-dimensions, and will proceed to the Fourier Transform of the non-commutative group of 3D rotations. Subjects covered will include correlation of images, shape matching, computation of invariants, and symmetry detection. Recommended Course Background: AS.110.201 and comfort with mathematical derivations.
Instructor(s): M. Kazhdan.

EN.601.661. Computer Vision. 3.0 Credits.
Same material as 601.461, for graduate students. Students may receive credit for at most one of 601.461/661/761. This course gives an overview of fundamental methods in computer vision from a computational perspective. Methods studied include: camera systems and their modeling, computation of 3-D geometry from binocular stereo, motion, and photometric stereo; and object recognition. Edge detection and color perception are covered as well. Elements of machine vision and biological vision are also included. [Applications] Recommended Course Background: intro programming, linear algebra, prob/stat.
Prerequisites: Students may receive credit for only one of EN.600.361, EN.600.461, EN.600.661, EN.601.461, EN.601.661.
Instructor(s): H. Ali
Area: Engineering.

EN.601.463. Algorithms for Sensor-Based Robotics. 3.0 Credits.
This course surveys the development of robotic systems for navigating in an environment from an algorithmic perspective. It will cover basic kinematics, configuration space concepts, motion planning, and localization and mapping. It will describe these concepts in the context of the ROS software system, and will present examples relevant to mobile platforms, manipulation, robotics surgery, and human-machine systems. [Analysis]
Prerequisites: EN.600.226 OR EN.601.226 and Linear Algebra and Probability; Students may receive credit for only one of EN.600.336, EN.600.436, EN.600.636, EN.601.463, EN.601.663.
Instructor(s): S. Leonard
Area: Engineering.

For current faculty and contact information go to https://www.lcsr.jhu.edu/Faculty

Faculty
Professors
Gregory Chirikjian

Noah Cowan
Professor (Mechanical Engineering): Robotics, Neuroscience, Dynamics, Controls, & Locomotion. Courses: System Identification; Robot Devices, Kinematics, Dynamics, and Control; Physics and Feedback in Living Systems; Locomotion in Mechanical and Biological Systems; Linear Systems.
Ralph Etienne-Cummings
Professor (Electrical and Computer Engineering): Neuromorphic Computational Sensing and Integrated Microsystems; Courses: CAD Design of Digital VLSI Systems, Electronics Design Laboratory, Seminar on Large Scale Analog Computation.
Gregory Hager
Professor (Computer Science): Computer Vision, Human-Machine Systems, Medical Applications; Courses: Data Structures, Computer Vision, Sensor-Based Robotics.

Jerry Prince
Professor (Electrical and Computer Engineering): Medical Imaging and Computer Vision; Courses: Medical Imaging Systems.

Russell Taylor
Professor (Computer Science): Medical Robotics and Computer-Integrated Interventional Systems, Medical Imaging and Modeling; Courses: Computer Integrated Surgery I & II.

Rene Vidal
Professor (Biomedical Engineering): Biomedical Imaging, Computer Vision and Machine Intelligence; Courses: Advanced Topics in Computer Vision, Advanced Topics in Machine Learning.

Louis Whitcomb

Associate Professor
Dennice Gayme

Assistant Professors
Jeremy Brown
Assistant Professor (Mechanical Engineering): Haptic feedback, upper-limb prosthetics, surgical robotics, rehabilitation robotics, human-machine interaction; Courses: Haptic Interface Design for Human-Robot Interaction.

Muyinatu (Bisi) Bell
Assistant Professor (Electrical and Computer Engineering): Medical Imaging, Medical Robotics, Image-Guided Surgery; Courses: Introduction to Medical Imaging, Ultrasound and Photoacoustic Beamforming.

Emad Boctor
Assistant Professor (Radiology): Image-Guided Intervention Ultrasound Imaging.

Chien-Ming Huang

Marin Kobilarov
Assistant Professor (Mechanical Engineering): Computational Dynamical Systems, Robot Control and Motion Planning; Courses: Applied Optimal Control, Nonlinear Control and Planning in Robotics.

Chen Li
Assistant Professor (Mechanical Engineering): Terradynamics, Locomotion, Comparative Biomechanics, Bio-Robotics, Robophysics; Courses: Locomotion I: Mechanics, Comparative BioMechanics.

Enrique Mallada
Assistant Professor (Electrical and Computer Engineering): Networked Dynamical Systems, Power Systems, Control Theory, Optimization; Courses: Networked Dynamical Systems.

Research Professor
Peter Kazanzides
Research Professor (Computer Science): Medical Robotics; Space Robots; Software Systems and Architectures; Robot Control Systems, Augmented Reality.

Nassir Navab

Associate Research Professor
Mehran Armand
Associate Research Professor (Mechanical Engineering) and Principal Staff (JHUAPL): Medical Robotics and Computer-Integrated Interventional Systems, Biomechanics; Courses: Kinematics and Dynamics of Robots, Robot Control.

Iulian Iordachita
Associate Research Professor (Mechanical Engineering): Medical Robotics; Mechanical Design, Medical Instrumentation, Sensorized Surgical Tools.

Assistant Research Professor
Simon Leonard

Multi-School Programs of Study
At Johns Hopkins University, some programs are offered through a partnership between two or more of the University’s nine schools.

Space Science and Engineering
This minor is open to all students in the Whiting School of Engineering and the Krieger School of Arts and Sciences who have the prerequisites for the required courses. The objective of the Minor is to prepare students for a career in Space Science and Space Engineering, either directly as an entering professional in industry, government laboratories and other organizations or as a student in a graduate program. The educational goal of the Minor is to enable students to:

• Apply their understanding and mastery of the fundamental scientific, engineering, and mathematical principles obtained through their major subject of study to space science and space engineering.
• Develop an understanding and capacity for interdisciplinary approaches to technical activities.
• Improve their ability to work in multidisciplinary teams, which are typical in space and other complex technical activities, through interdisciplinary education and internship(s) or equivalent experience(s).

Minor in Space Science and Engineering
Requirements for the Minor:

• A Proposal and Course Plan, which must be approved by your adviser for the minor (hereafter referred to as the “Adviser”). The proposal must discuss a theme that unites the individual elements of the program (courses and internship(s)) into an intellectual whole.
• Five courses in Science and Engineering. One course is specified (AS.171.321 Introduction to Space, Science, and Technology) and the remaining four are chosen through your Proposal and Course Plan, which must be approved prior to taking the courses by the Adviser. All courses must be taken for a grade rather than satisfactory/unsatisfactory. A grade of C- or better is required. Courses that are named as requirements for the student’s major may not be used. However, courses that are not named, but satisfy an elective requirement for the major, may be used.
• An internship or equivalent experience in the field of space science and engineering is required. This must have prior approval from the Adviser.
• A brief report on the internship or equivalent experience to the Adviser.

For a detailed explanation of the minor and its requirements, including sample programs of study, please visit the Student Handbook for the Minor in Space Science and Engineering (http://spacestudies.jhu.edu/space-minor).

Business
The Business Minor is a joint program offered by The Whiting School of Engineering, through the Center for Leadership and Education, the Carey Business School and the Krieger School of Arts and Sciences, through the Center of Financial Economics, to Johns Hopkins undergraduates in the KSAS, WSE and Peabody Institute. The minor offers Johns Hopkins Arts & Sciences, Engineering, and Peabody students a focused, quantitative minor that will prepare them more effectively for careers in small companies, major corporations, and consultancies as well as acceptance into graduate programs in accountancy and business.

The primary objective for the minor is to help students position themselves as leaders among their peers in the private sector,
government, the non-profit sector, and the world of social enterprises. At the conclusion of their program, successful students will be able to:

- Enter a variety of careers such as finance, management, real estate, marketing, accounting and consulting.
- Create, analyze, and implement value propositions about projects and products for the benefit of various audiences, from shareholders to local communities.
- Establish and manage brands and products and also institutions and organizations.
- Build, manage and grow valuable and lasting relationships with clients, customers, shareholders, creditors, and local communities.
- Recognize, understand, capitalize on, and generate changing trends in local and global economies.
- Be responsible business leaders who are engaged citizens of their communities, cities and countries.

The joint program plans to achieve its goal of training future leaders by offering an instructional program that combines critical analysis and theoretical grounding in a broad set of core and required courses, some depth through a relevant elective chosen from a list of courses in specialized topics, and hands-on experience through internships, community-based learning, and experiential programs.

Students pursuing a CLE minor who wish to add the Business Minor must take at least three unique courses in the Business Minor that may not be applied to any other CLE minor. Students pursuing a CLE minor who wish to add the Business Minor must take at least three unique courses in the Business Minor that may not be applied to any other CLE minor.

See the Undergraduate tab above for specific requirements for the minor.

**Business Minor Requirements**

- Two foundational courses
- Five core courses
- One elective

Students pursuing a CLE minor who wish to add the Business Minor must take at least three unique courses in the Business Minor that may not be applied to any other CLE minor.

**Foundational Courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.661.380</td>
<td>Business Analytics (*Statistics)</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.105</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>or AS.180.102</td>
<td>Elements of Microeconomics</td>
<td>3-4</td>
</tr>
</tbody>
</table>

*Students are encouraged to fulfill the Business Analytics requirement but will be allowed to substitute statistics course(s) by choosing one of the two options listed below. Students can substitute AP Statistics for Stat I but not Stat II

**Students cannot substitute AP Economics for Microeconomics**

**Option 1:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.553.111</td>
<td>Statistical Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>or AS.230.205</td>
<td>Introduction to Social Statistics</td>
<td></td>
</tr>
<tr>
<td>or AS.280.345</td>
<td>Public Health Biostatistics</td>
<td></td>
</tr>
<tr>
<td>EN.553.112</td>
<td>Statistical Analysis II</td>
<td>4</td>
</tr>
</tbody>
</table>

**Option 2:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.540.305</td>
<td>Modeling and Statistical Analysis of Data for Chemical and Biomolecular Engineers</td>
<td>3-4</td>
</tr>
</tbody>
</table>

or EN.553.211 Probability and Statistics for the Life Sciences
or EN.553.310 Probability & Statistics
or EN.553.430 Introduction to Statistics
or EN.560.348 Probability & Statistics in Civil Engineering

**Required Core Courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.660.203</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.250</td>
<td>Principles Of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.200</td>
<td>Principles of Finance</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.340</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>EN.660.343</td>
<td>Operations and Service Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives:**

As the Business Minor is under construction, electives are still being developed. Electives offered by the Center for Leadership Education and Economics Department are courses that have been previously offered in other programs; courses from Carey Business School will be decided upon at a later date. Stay up to date by visiting the Center for Leadership Education's website (https://engineering.jhu.edu/cle).

**Course and Grade Rules and Limitations**

The Business minor requires a minimum of 24 credits. A maximum of 6 credits of courses taken from outside WSE and KSAS (including transfer course & study abroad) may be applied to the Business minor.

A maximum of 3 credits may be taken on an S/U basis, after freshman Fall semester. All courses applied to the Business minor must be completed with a grade of C- or above.

**Peabody Double Degree**

The Peabody Conservatory and the Homewood schools offer the opportunity for a select number of academically and musically advanced students to simultaneously pursue a Bachelor of Music degree and either a Bachelor of Arts or Bachelor of Science degree from the Krieger School of Arts and Sciences or the Whiting School of Engineering.

Students must be admitted independently to Peabody by way of audition, and also to one of the Homewood schools to be invited to participate in the Double Degree Program. Audition standards for Peabody Double Degree students are the same as for all students auditioning for the conservatory. The Double Degree program takes a minimum of five years to complete. Students who have begun their junior year of study are not eligible to enter the Double Degree Program, nor may students transfer into the program midyear.

Administrative services such as registration, financial aid, and student health benefits are provided to Double Degree students by the Homewood schools. Consequently, students in the Double Degree Program are not eligible to receive Peabody merit scholarships or any other form of financial aid from Peabody.

**Student Status**

Students in the double degree program are responsible for meeting the requirements of both degree curricula within the published guidelines of the relevant programs. Students’ principal affiliation is with the Krieger School of Arts and Science or the Whiting School of Engineering. All official procedures of registration and records are managed through the Homewood Office of the Registrar. The official transcript for a double
degree student, including all courses at both Peabody and Homewood, is maintained by the Homewood Office of the Registrar.

**Enrollment requirements and limits**
Double Degree students must enroll in private lessons each semester. Instrumental majors are required to enroll each semester for large ensembles and private lessons to maintain their status as Peabody degree candidates in the Double Degree Program. Double Degree students must register for no less than one course at Homewood each semester. Peabody Double Degree students are permitted to enroll in a maximum of 23 credits per semester.

**Residency Requirement for Peabody Double Degree Students**
Peabody Double Degree students must complete at least 48 credits on the Homewood campus, in the Krieger School of Arts & Sciences and/or the Whiting School of Engineering.

**Course changes and withdrawals from Peabody courses**
Students must follow the deadlines and processes for adding, dropping or withdrawing from Peabody courses which are published on the Peabody Academic Affairs website at https://peabody.jhu.edu/academics/academic-calendar-resources/.

**Course changes and withdrawals from Arts and Sciences and Engineering courses**
Students must follow the deadlines and processes for adding, dropping or withdrawing from Arts & Sciences and/or Engineering courses which are published on the Homewood Registrar's Office website at https://studentaffairs.jhu.edu/registrar/students/registration/.

**Leave of Absence**
Double Degree students may request a Leave of Absence (LOA) from the entire program, however, they cannot be granted leave from only one portion of the program. A LOA for Double Degree students is subject to the guidelines of the student's respective academic advising office on the Homewood campus.

**Graduation Policies**
Double Degree students must petition to graduate from the Peabody Conservatory in accordance with information located at https://peabody.jhu.edu/academics/academic-calendar-resources/registrar/, and also adhere to the policies and procedures for applying to graduate from their Homewood school, Arts and Sciences or Engineering as indicated at http://e-catalog.jhu.edu/undergrad-students/academic-policies/graduation-policies/. Both degrees are awarded simultaneously, and degree conferral is available only in May of each academic year.
FACULTY LISTINGS

Select the school faculty tab to view a listing of Johns Hopkins University faculty on the Homewood campus in the Schools of Arts and Sciences and Engineering.

For the most current listing of faculty, please visit individual department pages.

Zanvyl Krieger School of Arts and Sciences

In listing the members of the teaching staff of the School of Arts and Sciences, the date in parentheses indicates the year of original appointment. Joint appointments or directorships are listed last.

Emeritus Faculty

Professors Emeriti

Karl Alexander, Ph.D.
John Dewey Professor Emeritus of Sociology
Research Professor
Academy Professor

John Baldwin, Ph.D.
Charles Homer Haskins Professor Emeritus History

Gregory Ball, Ph.D.
Psychological and Brain Sciences

Charles Albro Barker, Ph.D.
American History

Stephen Barker, Ph.D.
Philosophy

Bruce Barnett, Ph.D.
Physics and Astronomy
Academy Professor

John Barth, M.A.
The Writing Seminars

Michael Beer, Ph.D.
Biophysics

Sara S. Berry, Ph.D.
History
Academy Professor

Maurice Bessman, Ph.D.
Biology

John Boardman, Ph.D.
Mathematics

Ludwig Brand, Ph.D.
Biology
Academy Professor

Luigi Burzio, Ph.D.
Cognitive Science

Sharon Cameron, Ph.D.

English

Chih Yung Chien, Ph.D.
Physics and Astronomy

Carl F. Christ, Ph.D.
Economics

Jerrold Cooper, Ph.D.
W.W. Spence Professor Emeritus of Semitic Languages

Joseph Cooper, Ph.D.
Political Science
Academy Professor

Richard Cone, Ph.D.
Biophysics
Academy Professor

Joseph Cooper, Ph.D.
Academy Professor

Hent de Vries, Ph.D.
Russ Family Professor Emeritus of the Humanities

Charles Dempsey, Ph.D.
History of Art

Marcel Detienne, Ph.D.
Classics

Gabor Domokos, Ph.D.
Physics and Astronomy

David Draper, Ph.D.
Chemistry

Doris Entwisle, Ph.D.
Sociology

Douglas Fambrough, Ph.D.
Biology

Frances Ferguson, Ph.D.
English

George Fisher, Ph.D.
Earth and Planetary Sciences

Richard Flathman, Ph.D.
Political Science

Robert Forster, Ph.D.
History

Michael Fried, Ph.D.
James R. Herbert Boone Professor Emeritus of Humanities
Academy Professor

Thomas Fulton, Ph.D.
Physics and Astronomy

Louis Galambos, Ph.D.
History
Academy Professor

Hans Goedicke, Ph.D.
Near Eastern Studies
Richard Goldthwaite, Ph.D.
History

Bert Green, Ph.D.
Psychological and Brain Sciences

Jack Greene, Ph.D.
History

Allen Grossman, Ph.D.
English

Jane Guyer, Ph.D.
Anthropology
Academy Professor

Bruce Hamilton, Ph.D.
Economics

Neil Hertz, M.A.
Humanities Center; English

John Holland, Ph.D.
Social Relations

J. Woodford Howard, Ph.D.
Thomas P. Stran Professor Emeritus
Political Science

Jun-ichi Igusa, Ph.D.
Mathematics

John T. Irwin, Ph.D.
Decker Professor Emeritus in the Humanities
Academy Professor

Michael Johnson, Ph.D.
History
Academy Professor

Brian R. Judd, Ph.D.
Gerhard H. Dieke Professor Emeritus
Physics and Astronomy

Richard Kagan, Ph.D.
Arthur O. Lovejoy Professor Emeritus of History
Academy Professor

Margaret Keck, Ph.D.
Political Science
Academy Professor

Herbert L. Kessler, M.F.A.
History of Art

Chung Kim, Ph.D.
Physics and Astronomy

James B. Knapp
Zanvyl Krieger School of Arts and Sciences Dean Emeritus

Franklin W. Knight, Ph.D.
Leonard and Helen R. Stulman Professor Emeritus of History
Academy Professor

Susan Kovesi-Domokos, Ph.D.
Physics and Astronomy

Lieselotte E. Kurth, Ph.D.
German

Yung K. Lee, Ph.D.
Physics and Astronomy

Ruth Leys, Ph.D.
Henry Wiesenfeld Professor Emeritus of Humanities
Academy Professor

Vernon Lidtke, Ph.D.
History

Warner Love, Ph.D.
Biophysics

Georg Luck, Ph.D.
Classics

Louis Maccini, Ph.D.
Economics

Richard Macksey, Ph.D.
Humanities Center

Henry Maguire, Ph.D.
History of Art

Bruce D. Marsh, Ph.D.
Earth and Planetary Sciences
Academy Professor

Richard E. McCarty, Ph.D.
William D. Gill Professor Emeritus of Biology

P. Kyle McCarter, Jr., Ph.D.
Academy Professor

Edward L. McDill, Ph.D.
Sociology

Jean-Pierre Meyer, Ph.D.
Mathematics

Warren Moos, Ph.D.
Physics and Astronomy

Brown L. Murr, Ph.D.
Chemistry

Jacques Neefs, Ph.D.
James M. Beall Professor Emeritus of French Literature

Stephen Nichols, Ph.D.
James M. Beall Professor Emeritus
German and Romance Languages and Literatures

Alex Nickon, Ph.D.
Chemistry

Paul R. Olson, Ph.D.
Hispanic and Italian Studies

Takashi Ono, Ph.D.
Faculty Listings

Mathematics

Thomas Osborn, Ph.D.
Earth and Planetary Sciences

Ronald Paulson, Ph.D.
English

Aihud Pevsner, Ph.D.
Jacob L. Hain Professor Emeritus
Physics and Astronomy

John G. A. Pocock, Ph.D.
Harry C. Black Professor Emeritus
History

Doug Poland, Ph.D.
Chemistry

Gary H. Posner, Ph.D.
Jean and Norman Scowe Professor Emeritus of Chemistry
Research Professor

Peter Privalov, Ph.D.
Biophysics

Orest Ranum, Ph.D.
History

Pamela Reynolds, Ph.D.
Anthropology

Dean W. Robinson, Ph.D.
Chemistry

George Rose, Ph.D.
Krieger Eisenhower Professor Emeritus, Biophysics
Research Professor

Dorothy Ross, Ph.D.
Arthur O. Lovejoy Professor Emeritus of History

Lester Salamon, Ph.D.
Political Science

Jerome Schneewind, Ph.D.
Philosophy

H. Alan Shapiro, Ph.D.
W.H. Collins Vickers Professor Emeritus of Archaeology
Academy Professor

Allen Shearn, Ph.D.
Biology

Harris J. Silverstone, Ph.D.
Professor, Chemistry
Academy Professor

Nancy Struwever, Ph.D.
Humanities Center and History

Eric Sundquist, Ph.D.
Andrew W. Mellon Emeritus Professor of Humanities

James C. Walker, Ph.D.

Physics and Astronomy

Mack Walker, Ph.D.
History

Judith Walkowitz, Ph.D.
History

Meredith Williams, Ph.D.
Philosophy
Academy Professor

H. Peyton Young, Ph.D.
Scott and Barbara Black Professor Emeritus
Economics

Larzer Ziff, Ph.D.
Caroline Donovan Professor of English Literature Emeritus
English

Professors

Peter Achinstein (1962)
Professor, Philosophy

Sharon Achinstein (2014)
Professor, English
B.A. 1985, Harvard University
Ph.D. 1990, Princeton University

Rina Agarwala (2006)
Associate Professor, Sociology
B.A. 1995, Harvard University
M.A. 1999, Harvard University
Ph.D. 2006, Princeton University

Emily Agree (2012)
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B.A. 1981, University of Rochester
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M.Sc. 2003, London School of Economics and Political Science
M.Phil 2008 | Ph.D. 2013, City University of New York

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M.F.A. 2003, University of Washington

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Homewood Professor of the Arts, The Writing Seminars
Director, Program in Theater Arts and Studies
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Meghan Avolio (2017)
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Ph.D. 2012, Yale University

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M.S. 2009 | Ph.D. 2012, University of Michigan, Ann Arbor

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Rebecca Brown (2008)
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M.A. 1975 | M.Phil. 1976 | Ph.D. 1980, Yale University

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Andrew J. Cherlin (1976)
Professor and Chair, Sociology; Institute for Policy Studies
Public Policy Program
Benjamin H. Griswold III Professor of Public Policy
B.S. 1970, Yale University
M.S. 1974 | Ph.D. 1976, University of California, Los Angeles

Chia-Ling Chien (1976)
Professor, Physics and Astronomy
Jacob L. Hain Professor in Arts and Sciences
B.S. 1965 | M.S. 1968, Tunghai University
Ph.D. 1973, Carnegie Mellon

Associate Professor, Political Science
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M.A. 1994, University of Washington
Ph.D. 2003, Northwestern University

Orna Cohen-Fix (2012)
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B.A. 1986, Tel-Aviv University
M.S. 1989 | Ph.D. 1994, Weizmann Institute of Science

Jaime Combariza (2014)
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Director, Maryland Advanced Research Computing Center
B.S. 1979, Universidad Pedagógica y Tecnológica de Colombia
Ph.D. 1988, Southern Illinois University at Carbondale

Nathan Connolly (2008)
Herbert Baxter Adams Associate Professor, History
B.A. 1999 Thomas University
M.A. 2000, University of Chicago
M.A. 2004 | Ph.D. 2008, University of Michigan

William E. Connolly (1985)
Professor, Political Science
Krieger-Eisenhower Professor
B.A. 1960, University of Michigan, Flint
M.A. 1962 | Ph.D. 1965, University of Michigan, Ann Arbor

Caterina Consani (2005)
Professor, Mathematics
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Ph.D. 1993, Universities of Genoa-Turin
Ph.D. 1996, University of Chicago

Victor Corces (2009)
Adjunct Professor, Biology
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Ph.D. 1978, Universidad Autonoma de Madrid

Susan Courtney (1999)
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Ph.D. 1993, University of Pennsylvania

Jennifer Culbert (2001)
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M.S. 2012, Université Paris-Sud / Universiteit Leiden (Algant)
Ph.D. 2018, University of Texas, Austin

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Laurea 2002, Libera Universita degli Studi
Ph.D. 2006, University of Cape Town

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Professor, Biology
B.S. 1985 | M.S. 1988, Beijing University
Ph.D. 1997, Yale University

Yixian Zheng (1999)
Adjunct Professor, Biology

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Austin Allen (2014)
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International Studies Program Director
Administrative Director, International Centers and Programs
Senior Lecturer, Program in International Studies
B.A. 1993, University of Puget Sound
M.Sc. 1994, University of Edinburgh
Ph.D. 2003, Cornell University

Michelle Walsh (2016)
Lecturer, Center for Language Education
B.A. 2004, Salisbury University

Meredith Ward (2008)
Director and Senior Lecturer, Program in Film and Media Studies
B.A. 2003, The Johns Hopkins University
M.A. 2004 | Ph.D. 2015, Northwestern University

Aliza Hapgood Watters (2013)
Lecturer, Program in Expository Writing Program
B.A. 2005, Middlebury College
M.A. 2006 | Ph.D. 2011, University of Oxford

Heidi Wheeler (1999)
Senior Lecturer, German and Romance Languages and Literatures
B.A. 1987, Southern Illinois University
M.A. 1993, University of Kansas
Ph.D. 1999, The Johns Hopkins University

Greg Williamson (1990)
Senior Lecturer, The Writing Seminar
B.A. 1987, Vanderbilt University
M.A. 1987, University of Wisconsin, Madison
M.A. 1989, The Johns Hopkins University

April Wuensch (2004)
Senior Lecturer, German and Romance Languages and Literatures
B.A. 1994, American University in Paris
M.A. 1995, University of London
Ph.D. 2004, The Johns Hopkins University

Julia Yarmolinskaya (2007)
Lecturer, Center for Language Education
B.B.A. 1999, Russian Institute of Economics and Finance
B.A. 2000, Pacific Union College

Lecturer, Program in Film and Media Studies
B.A. 1998, Duke University
M.F.A. 1990, Yale University

Jin Yin (2016)
Lecturer, Center for Language Education
B.A. 2009, Dalian University of Foreign Languages
M.A. 2012, Sun Yat-sen Universitys
M.A. 2014, Brandeis University

Lu Yin (2016)
Lecturer, Center for Language Education
B.A. 2010, Beijing International Studies University

Nan Zhao (2012)
Lecturer, Center for Language Education
B.A. 1999, Beijing Foreign Studies University
M.Ed. 2005, Boston University

Military Science

Michael Gorreck
Lieutenant Colonel
Director

Russell Buckhalt
Major
Assistant Professor

David Normand
Major
Assistant Professor

David Yi
Captain
Assistant Professor

Erik Mineo
Captain, Director for Scholarship and Enrollment

Rodney Graves
Master Sergeant
Senior Military Instructor

Bart Sime
Sergeant First Class
Military Instructor

Tim O’Neil
Recruiting Officer

Joint Appointments

Marilyn Albert, Ph.D.
Professor (School of Medicine)
Psychological and Brain Sciences

Richard Allen, Ph.D.
Assistant Professor (School of Medicine)
Psychological and Brain Sciences

Nan Marie Astone, Ph.D.
Associate Professor (Bloomberg School of Public Health)
Sociology

Jay Baraban, Ph.D.
Professor (School of Medicine)
Psychological and Brain Sciences

Stanley Becker, Ph.D.
Professor (Bloomberg School of Public Health)
Program in Public Health Studies

David Bishai, Ph.D.
Associate Professor (Bloomberg School of Public Health)
Economics; Program in Public Health Studies

Amanda Blackford, Sc.M.
Biostatistician (School of Medicine)
Program in Public Health Studies Program

Dana F. Boatman
Associate Professor (School of Medicine)
Cognitive Science

Lee Bone, M.P.H., R.N.
Associate Professor (Bloomberg School of Public Health) Program in Public Health Studies

Lawrence Cheskin, M.D. Associate Professor (Bloomberg School of Public Health) Program in Public Health Studies

Nathaniel Comfort, Ph.D. Associate Professor (School of Medicine) History of Science and Technology

Charles Edward Connor, Ph.D. Professor (School of Medicine) Director, Krieger Mind/Brain Institute Psychological and Brain Sciences

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William Eaton, Ph.D. Professor (Bloomberg School of Public Health) Sociology

David Edwin, Ph.D. Associate Professor (School of Medicine) Psychological and Brain Sciences

Jason Eisner, Ph.D. Associate Professor (Whiting School of Engineering) Cognitive Science

Margaret Ensminger, Ph.D. Professor (Bloomberg School of Public Health) Sociology

Joshua M. Epstein, Ph.D. Professor (School of Medicine) Economics

Greg Eyink, Ph.D. Professor (Whiting School Engineering) Mathematics; Physics and Astronomy

Ruth Faden, Ph.D. Professor (Bloomberg School of Public Health) Policy Studies Program, Institute for Policy Studies

Michael Falk, Ph.D. Professor (Whiting School of Engineering) Physics and Astronomy

Mary Fissell, Ph.D. Professor (School of Medicine) History; History of Science and Technology

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Barry Gordon, M.D. Professor (School of Medicine) Cognitive Science

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Steve Hanke, Ph.D. Professor (Whiting School of Engineering) Economics

Marta Hanson, Ph.D. Assistant Professor (School of Medicine) History of Science and Technology

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Catherine Norman, Ph.D.
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Randall Packard, Ph.D.
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History; History of Science and Technology

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Alexander Grass Humanities Institute; Advanced Academic Programs.

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Economics

Kenneth Rose, Ph.D.
Professor (School of Medicine)

Earth and Planetary Sciences

Erica J. Schoenberger, Ph.D.
Professor (Whiting School of Engineering)
Anthropology

Peter Searson, Ph.D.
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Physics and Astronomy

Robert Siliciano, M.D., Ph.D.
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Shubhranshu Singh, Ph.D.
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Marc Stein, Ph.D.
Assistant Professor (School of Education)
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Public Health Studies Program

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Peter Wilcock, Ph.D.
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Michael Yu, Ph.D.
Associate Professor (Whiting School of Engineering)
Chemistry

Scott Zeger, Ph.D.
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Program in Public Health Studies Program

Barry Zirkin, M.P.H.
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Program Public Health Studies Program

Whiting School of Engineering

In listing the members of the teaching staff of the School of Engineering, the date in parentheses indicates the year of original appointment. Any joint appointments or directorships are listed last.

Professors Emeriti

John Boland, Ph.D.
Environmental Health and Engineering

Grace Brush, Ph.D.
Environmental Health and Engineering

Robert (Tony) Dalrymple, Ph.D.
Civil Engineering

Frederic Davidson, Ph.D.
Electrical and Computer Engineering

Moise H. Goldstein Jr., D.Sc.
Electrical and Computer Engineering

Willis Gore
Electrical and Computer Engineering

Robert Green, Ph.D.
Materials Science and Engineering

Cila Herman, Ph.D.
Mechanical Engineering

Richard I. Joseph, Ph.D.
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Alexander Kaplan, Ph.D.
Electrical and Computer Engineering

Joseph L. Katz, Ph.D.
Chemical and Biomolecular Engineering

Jerome Kruger, Ph.D.
Materials Science and Engineering

Gerard G. L. Meyer, Ph.D.
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C. Harvey Palmer Jr., Ph.D.
Electrical and Computer Engineering

Wilson J. Rugh, Ph.D.
Electrical and Computer Engineering

William Sharpe, PhD.
Mechanical Engineering

Eugene D. Shchukin, Ph.D.; Dr.Sc.
Research Professor Emeritus, Environmental Health and Engineering

Charles (Roger) Westgate, Ph.D.
Electrical and Computer Engineering

Professors

Soumyadipta Acharya (2010)
Assistant Research Professor, Biomedical Engineering

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Associate Teaching Professor and Assistant Dean for International Programs

Environmental Health and Engineering

B.S. 1972, Jundi Shapour University

M.B.A. 2006, The Johns Hopkins University

M.S. 1980, The Ohio State University; Ph.D. 1983

Yair Amir (1995)
Professor, Computer Science

B.S. 1985, Technion, Haifa, M.S. 1990

Ph.D. 1995, Hebrew University of Jerusalem

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Professor, Electrical and Computer Engineering

B.S. 1978, Higher Technical Institute, Cyprus

M.S. 1982, Johns Hopkins University, Ph.D. 1986

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Assistant Research Professor, Biomedical Engineering

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Assistant Research Professor; Applied Mathematics and Statistics

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B.S. 1986, Lehigh University

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Assistant Professor, Mechanical Engineering

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Associate Professor, Applied Mathematics and Statistics

B.S. 2004, Indian Institute of Technology

M.S. 2006, Stony Brook University; Ph.D. 2010, Carnegie Mellon University

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B.S. 2006 Massachusetts Institute of Technology
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Professor, Chemical and Biomolecular Engineering
B.S. 1981, University of Virginia
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B.S. 1994, Lehigh University
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Assistant Professor, Applied Mathematics and Statistics
B.S. 2001, Tel-Aviv University
M.S. 2003, New York University
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Edward J. Bouwer (1985)
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B.S. 1977, Arizona State University
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B.S. 1998, M.S. 2004, Ben-Gurion University at Negev
Ph.D. 2011, University of California, Los Angeles

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Professor Emeritus, Environmental Health and Engineering
B.S. 1949, St. Francis Xavier University
M.S. 1951, University of Illinois
Ph.D. 1956, Harvard

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M.S. 1997, Eotvos Lorand University, Budapest; Ph.D. 2001

Randal Burns (2001)
Professor, Computer Science
B.S. 1993, Stanford
M.S. 1997, UC Santa Cruz, Ph.D. 2000

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Assistant Professor, Computer Science
Ph.D. 2014

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Professor, Materials Science and Engineering
B.S. 1988, China University of Mining and Technology
M.S. 1991, Taiyuan University
Ph.D. 1995, Shanghai Jiao Tong University

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Assistant Professor, Mechanical Engineering

B.S. 1998, National Taiwan University, M.S. 2000
Ph.D. 2007, University of North Carolina

Sang (Peter) Chin (2011)
Assistant Research Professor, Electrical and Computer Engineering

Gregory S. Chirikjian (1992)
Professor, Mechanical Engineering; Computer Science; Electrical and Computer Engineering;
Applied Mathematics and Statistics
B.S. 1988, The Johns Hopkins University; M.S. 1988
Ph.D. 1992, California Institute of Technology

Paulette Clancy (2018)
Professor, Head, Chemical and Biomolecular Engineering
Ph.D. 1977

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Professor, Applied Mathematics and Statistics
Ph.D. 1983

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Professor, Mechanical Engineering;
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B.S. 1995, Ohio State, M.S., 1997
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Associate Professor, Chemical and Biomolecular Engineering
B.S. 1999 Beijing University of Chemical Technology
M.S. 2002, Tsinghua University
Ph.D. 2007, University of Delaware

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Assistant Professor, Electrical and Computer Engineering
B.Eng. 2003, University of Sciences and Technology d'Oran
S.M. 2004, Pierre and Marie Curie University
Ph.D. 2009, Ecole de Technologie

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Assistant Professor, Computer Science
B.S. 2005, Princeton University
Ph.D. 2010, Carnegie Mellon University

Marc D. Donohue (1979)
Professor, Chemical and Biomolecular Engineering Director, Advanced Technology Lab
B.S. 1973, Clarkson College of Technology
Ph.D. 1977, UC Berkeley

Andrew S. Douglas (1983)
Professor, Mechanical Engineering; Biomedical Engineering
Vice Dean for Faculty, Whiting School of Engineering (2007)
B.S. 1975, University of Cape Town, M.S. 1977
Ph.D. 1982, Brown University

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Assistant Professor, Biomedical Engineering
B.S. 2003, University of California, Berkeley; M.S. 2007
Ph.D. 2010, University of Texas, Austin

Jason Eisner (2000)
Faculty Listings

Professor, Computer Science
B.S. 1990, Harvard
M.S. 1993, Cambridge University
Ph.D. 2001, University of Pennsylvania

Jafaar El-Awady (2010)
Associate Professor, Mechanical Engineering
B.S. 2001, Cairo University M.S. 2003
Ph.D. 2008, University of California, Los Angeles

Mounya Elhilali (2008)
Associate Professor, Electrical and Computer Engineering
B.S. 1998, Al Akhawayn University
M.S. 2003, University of Maryland; Ph.D. 2004

J. Hugh Ellis (1984)
Professor, Environmental Health and Engineering, Civil Engineering
B.S. 1979, University of Waterloo, M.S. 1981, Ph.D. 1984

Jonah Erlebacher (2000)
Professor and Chair, Materials Science and Engineering
Chemical and Biomolecular Engineering
B.S. 1991, Yale; Ph.D. 1999, Harvard University

Ralph R. Etienne-Cummings (1998)
Professor and Chair, Electrical and Computer Engineering
Associate Director of Education and Outreach Programs in the
Engineering Research Center for Computer-Integrated Surgical Systems and
Technology.
B.S. 1988, Lincoln University
Ph.D. 1995, University of Pennsylvania

Gregory Eyink (2002)
Professor, Applied Mathematics and Statistics;
Mechanical Engineering; Mathematics (A&S)
B.S. 1981, Ohio State, Ph.D. 1987

Michael Falk (2013)
Professor, Materials Science and Engineering
Vice Dean for Undergraduate Education, Whiting School of Engineering
(2017)
B.A. 1990, The Johns Hopkins University; M.S.E. 1991
Ph.D. 1998, University of California

Andrew Feinberg (2015)
Bloomberg Distinguished Professor; Biomedical Engineering
Inaugural Daniel Coit Gilman Scholar, Johns Hopkins University
King Fahd Professor of Medicine, Oncology, and Molecular Biology &
Genetics, Johns Hopkins University School of Medicine
Professor of Biostatistics, Johns Hopkins Bloomberg School of Public Health
Director, Center for Epigenetics, Johns Hopkins Institute for Basic Biomedical Sciences
Chief, Division of Molecular Medicine, Department of Medicine
B.A. 1973, The Johns Hopkins University School of Medicine; M.D. 1976;
M.PH. 1981

Paul Ferrero (2015)
Bloomberg Distinguished Professor, Environmental Health and Engineering
Bloomberg Distinguished Professor Carey School of Business
B.A. 1990, Duke University; M.S. 1994
Ph.D. 2001, Cornell University

James A. Fill (1988)
Professor, Applied Mathematics and Statistics
Computer Science
B.S. 1976, University of Illinois; M.S. 1979, University of Chicago, Ph.D. 1980

Donniell Fishkind (2001)
Associate Research Professor, Applied Mathematics and Statistics

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Assistant Professor, Electrical and Computer Engineering
B.S. 2003, State University of New York at Buffalo
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B.E. 1998, École Polytechnique de Montréal

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Assistant Professor, Chemical and Biomolecular Engineering
B.S. 2003, University of Massachusetts
M.S. 2005, Notre Dame; Ph.D. 2009

Stavros Gaitanaros (2015)
Assistant Professor, Civil Engineering
M.Sc. 2007, University of Thessaly, Greece
Ph.D. 2014, University of Texas at Austin

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B.S. 1997, McMaster University
M.S. 1998, UC Berkeley
Ph.D. 2010, California Institute of Technology

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Assistant Professor, Civil Engineering
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B.S. 1980, Indian Institute of Technology
M.S. 1983, Cornell University
Ph.D. 1988, University of Michigan, Ann Arbor

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B.S. 2005, Université de Montréal
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B.S.E. 1994, University of Michigan
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Bloomberg Distinguished Professor, Biomedical Engineering
Bloomberg Distinguished Professor, Biostatics and Biophysical Chemistry, Johns Hopkins School of Medicine
Bloomberg Distinguished Professor, Biostatics Krieger School of Arts and Sciences
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B.S. 1985, University of Cincinnati
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M.S. 1978, SUNY, Syracuse; Ph.D. 1983, Cornell University

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B.S. 2006, National Chiao Yung University
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Ph.D. 2015, University of Wisconsin, Madison

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B.S. 1977, Harvard University
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B.A./B.S. 2011, Peking University
Ph.D. 2016, Princeton University

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B.Tech 2006, Indian Institute of Technology
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B.S. 1977, Tel Aviv University; M.S. 1978, California Institute of Technology, Ph.D. 1982

Peter Kazanzides (2003)
Research Professor, Computer Science

Associate Professor, Computer Science
B.A. 1997, Harvard

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Bloomberg Distinguished Professor, Applied Mathematics and Statistics, WSE
Bloomberg Distinguished Professor, Department of Urology, School of Medicine
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Sanjeev Khudanpur (2001)
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Ph.D. 1997, University of Maryland

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Ph.D. 1987, Polytechnic University of New York

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Assistant Research Professor, Mechanical Engineering

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B.Sc. 2003, Trinity College
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Ph.D. 1998

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B.S. 1991, University of Notre Dame
M.S. 1994, University of Michigan;
M.S. 1997, The Johns Hopkins University; Ph.D. 2001

Benjamine Langmead (2012)
Assistant Professor, Computer Science
B.S. 2003, Columbia University
M.Sc. 2009, University of Maryland-College Park; Ph.D. 2012

Teresa Lebair (2016)
Assistant Research Professor, Applied Mathematics and Statistics

Simon Leonard (2011)
Assistant Research Professor, Computer Science

Chen Li (2016)
Assistant Professor, Mechanical Engineering
B.S. 2005, Peking University
Ph.D. 2011, Georgia Institute of Technology

Rong Li (2015)
Bloomberg Distinguished Professor, Chemical and Biomolecular Engineering
Bloomberg Distinguished Professor, Department of Cell Biology, Johns Hopkins School of Medicine
B.S. and M.S. (combined) 1988, Yale University
Ph.D. 1992, University of California, San Francisco

Xin Li (2013)
Assistant Professor, Computer Science
B.S. 2002, Tsinghua University; M.S. 2005; Ph.D. 2011, University of Texas at Austin

En (Evan) Ma (1998)
Professor, Materials Science and Engineering
B.S. 1982, Tsinghua University, China, M.S. 1985
Ph.D. 1989, California Institute of Technology

Feilim Mac Gabhann (2009)
Associate Professor, Biomedical Engineering
Institute for Computational Medicine
B.E. 1997, University College, Dublin
Ph.D. 2006, The Johns Hopkins University

Enrique Mallada (2016)
Assistant Professor, Electrical and Computer Engineering
B.S. 2005, Universidad Uruguay; Ph.D. 2013, Cornell University

Hai-Quan Mao (2002)
Professor, Materials Science and Engineering
B.S. 1988, Wuhan University, Ph.D. 1993

Steven Marra (2015)
Associate Teaching Professor, Mechanical Engineering
B.S. 1993, University of Pittsburgh;
M.S. 1997, The Johns Hopkins University; Ph.D. 2001

David Masica (2013)
Assistant Research Professor, Biomedical Engineering

Patricia McGuiggen (2006)
Associate Research Professor, Materials Science and Engineering

Charles V. Meneveau (1990)
Louis M. Sardella Professor, Mechanical Engineering; Environmental Health and Engineering
B.S. 1985, University Federico Santa Maria, Chile
M.S. 1987, Yale, Ph.D. 1989

Michael I. Miller (1998)
Herschel and Ruth Seder Professor, Biomedical Engineering
Director, Center for Imaging Science
Electrical and Computer Engineering
Applied Mathematics and Statistics; Computer Science
B.S. 1976, SUNY; M.S. 1978, The Johns Hopkins University, Ph.D. 1983

Judith Mitrani-Reiser (2010)
Assistant Professor, Civil Engineering

B.S. 2000, University of Florida
M.S. 2001, University of California, Berkeley
Ph.D. 2007, California Institute of Technology

Rajat Mittal (2009)
Professor, Mechanical Engineering
B.E. 1989, Indian Institute of Technology
M.S. 1991, University of Florida
Ph.D. 1995, University of Illinois at U.C.

Christopher Moen (2016)
Associate Research Professor, Civil Engineering

Sara Miner More (2014)
Associate Teaching Professor, Computer Science
B.S. 1996, University of Dayton;
M.S. 1998, University of California, San Diego; Ph.D. 2003

Timothy Mueller (2012)
Assistant Professor, Materials Science and Engineering
A.B. 1998, Harvard University
Ph.D. 2007, Massachusetts Institute of Technology

Professor, Applied Mathematics and Statistics
B.S. 1977, Cornell; M.S. 1979, University of Illinois, Ph.D. 1982

Nassir Navab (2013)
Research Professor, Computer Science

Thao (Vicky) Nguyen (2018)
Professor, Mechanical Engineering
B.S., 1990, University of Wisconsin
Ph.D. 1996, University of Texas, Austin

Marc Ostermeier (2000)
Professor, Chemical and Biomolecular Engineering
B.S. 1990, University of Wisconsin
Ph.D. 1996, University of Texas, Austin

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Assistant Professor, Electrical and Computer Engineering; Ph.D. 2010

Philine Poulilouen (2014)
Assistant Research Professor, Electrical and Computer Engineering

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Assistant Professor, Environmental Health and Engineering
B.S. 1997, Carnegie Mellon University
Ph.D. 2010, Massachusetts Institute of Technology

Carey S. Priebe (1994)
Professor, Applied Mathematics and Statistics
Computer Science
B.S. 1984, Purdue
M.S. 1988, San Diego State University
Ph.D. 1993, George Mason University

Jerry L. Prince (1989)
William B. Kouwenhoven Professor and Associate Director for Research in Engineering Research Center for Computer-Integrated Surgical Systems and Technology, Electrical and Computer Engineering; Computer Science; Applied Mathematics and Statistics
B.S. 1979, University of Connecticut
M.S. 1982, M.I.T., Ph.D. 1988
Harihar Rajaram (2018)
Professor, Environmental Health and Engineering; Ph.D. 1991

Kaliat T. Ramesh (1988)
Elonzo G. Decker Jr. Professor in Science and Engineering, Mechanical Engineering
Materials Science and Engineering
B.S. 1982, Bangalore University, India
M.S. 1987, Brown University, Ph.D. 1987

Tilak (John) Ratnanather (1998)
Associate Research Professor, Biomedical Engineering, Center for Imaging Science

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Assistant Research Professor, Computer Science

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Associate Research Professor, Electrical and Computer Engineering

A. Lynn Roberts (1993)
Professor, Environmental Health and Engineering
B.S. 1977, Pomona College
M.S. 1984, University of Waterloo
Ph.D. 1993, M.I.T.

Daniel Robinson (2011)
Assistant Professor, Applied Mathematics and Statistics
B.A. 2001, James Madison University
M.A. 2003, University of California-San Diego, Ph.D. 2007

Aviel Rubin (2003)
Professor, Computer Science

Steven Salzberg (2014)
Bloomberg Distinguished Professor Computer Science
Bloomberg Distinguished Professor Biomedical Engineering, Johns Hopkins University School of Medicine,
Bloomberg Distinguished Professor Biostatistics, Bloomberg School of Public Health
B.A. 1980, Yale University; M. Phil. 1984, M.S. 1982
Ph.D. 1989, Harvard University

Suchi Saria (2012)
Assistant Professor, Computer Science
B.A. 2004, Mount Holyoke College
Ph.D. 2011, Stanford University

Sridevi Sarma (2009)
Associate Professor, Biomedical Engineering
Institute for Computational Medicine
B.S. 1994, Cornell University
S.M. 1997, M.I.T; Ph.D. 2006

Benjamin Schafer (2000)
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B.S. 1993, University of Iowa
M.S. 1995, Cornell University, Ph.D. 1997

Michael Schatz (2016)
Bloomberg Distinguished Associate Professor, Computer Science
Bloomberg Distinguished Associate Professor, Biology, Krieger School of Arts and Sciences
B.S. 2000, Carnegie Mellon University

Vice Dean for Graduate Education, Whiting School of Engineering (2008)
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M.S. 1981, Princeton University, Ph.D. 1984

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B.Sc. 1980, University of Toronto
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Associate Professor, Chemical and Biomolecular Engineering
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B.S. 2006, Loyola University
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B.A. 2007, Franklin and Marshall College
Ph.D. 2011, University of Maryland, College Park

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Ph.D. 1989, Cornell University

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Ph.D. 1991, The Johns Hopkins University
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B.S. 1978, University of Maryland
M.S. 1981, California Institute of Technology, Ph.D. 1983
Sean Sun (2003)
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B.S. 1994, Pennsylvania State University
Ph.D. 1998, University of California, Berkeley
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B.S. 1994, M.I.T., M.S. 2005, Massachusetts Institute of Technology; Ph.D. 2007
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B.S. 1994, M.I.T., M.S. 1994
Ph.D. 1998, University of Wisconsin
Natalia Trayanova (2006)
Murray B. Sachs Professor, Biomedical Engineering, Institute for Computational Medicine
M.S. 1982, Sofia University, Bulgaria
Ph.D. 1986, Bulgarian Academy of Sciences
Benjamin van Durme (2016)
Assistant Professor, Computer Science
B.A. and B.S. 2001, University of Rochester
M.S. 2004 and 2006, Carnegie Mellon University
Ph.D. 2009, University of Rochester
S. Swaroop Vedula (2012)
Assistant Research Professor, Malone Center for Engineering in Healthcare
Archana Venkataraman (2016)
Assistant Professor, Electrical and Computer Engineering
S.B. 2006, Massachusetts Institute of Technology
M.Eng. 2007; Ph.D. 2012
Professor, Biomedical Engineering
B.S. 1992, National Taiwan University; M.S. 1994
Ph.D. 2002, University of California, Los Angeles
Professor, Mechanical Engineering
B.S. 1983, Dartmouth College; M.S. 1985
Ph.D. 1990, Stanford University
Howard L. Weinert (1974)
Professor, Electrical and Computer Engineering
B.S. 1967, Rice University
M.S. 1968, Stanford University, Ph.D. 1972
John C. Wierman (1981)
Professor, Applied Mathematics and Statistics
B.S. 1984, Yale University
M.S. 1988, Ph.D. 1992
John C. Wierman (1981)
Faculty Listings

B.S. 1971, University of Washington, Ph.D. 1976
Denis Wirtz (1994)
Theophilus Halley Smoot Professor, Chemical and Biomolecular Engineering
Materials Science and Engineering
B.S. 1998, University of Belgium
M.S. 1990, Stanford University, Ph.D. 1993
Yanxun Xu (2015)
Assistant Professor, Applied Mathematics and Statistics
B.S. 2007, Beijing University of Aeronautics
M.S. 2010, Texas Tech University
Ph.D. 2013, Rice University/University of Texas Joint Program
David Yarowsky (1996)
Professor, Computer Science
B.S. 1987, Harvard University
M.S. 1993, University of Pennsylvania, Ph.D. 1996
Laurent Younes (2003)
Professor and Chair, Applied Mathematics and Statistics
M.S. 1985, University Paris Sud, Ph.D. 1988
Alan Yuille (2016)
Bloomberg Distinguished Professor Computer Science
Bloomberg Distinguished Professor Cognitive Science, Krieger School of Arts and Sciences
B.A. 1976, Cambridge University; PhD 1981
Tamer Zaki (2013)
Associate Professor, Mechanical Engineering
B.S. 1998, Pennsylvania State University
M.S. 2001, Stanford University; Ph.D. 2005

Other Faculty Appointments

Lecturers
Michael Agronin, M.S.
Lecturer, Center for Leadership Education, 2012
Lawrence Aronhime, M.B.A.
Senior Lecturer, Center for Leadership Education, 2001
Prashant Athavale, Ph.D.
Lecturer, Applied Mathematics and Statistics, 2015
David Audley, Ph.D.
Senior Lecturer, Applied Mathematics and Statistics, 1997
Soraya Bailey, M.Sc.
Lecturer, Mechanical Engineering, 2016
Justin Beauchamp, M.S.
Lecturer, Center for Leadership Education, 2015
Jenny Bernstein, M.P.H.
Lecturer, Center for Leadership Education, 2014
Beryl Castello, Ph.D.
Senior Lecturer, Applied Mathematics and Statistics, 2004
Xin Chen, Ph.D.
Lecturer, Civil Engineering, 2012
Joel Coffman, Ph.D
Lecturer, Information Security Institute
Susan Conley, M.S.
Lecturer, Center for Leadership Education, 2016
Lise Dahuron, Ph.D.
Lecturer, Chemical and Biomolecular Engineering, 2007
Laura Davis, M.A.
Lecturer, Center for Leadership Education, 2011
Lucas deMelo, Ph.D.
Lecturer, Civil Engineering, 2012
Marci De Vries, M.A.
Lecturer, Center for Leadership Education, 2011
Kevin Dungay, Ph.D.
Senior Lecturer, Center for Leadership Education, 1998
David Fisher, J.D.
Lecturer, Center for Leadership Education, 2001
Mark Franceschini
Senior Lecturer, Center for Leadership Education, 2000
Peter Fröhlich, Ph.D.
Senior Lecturer, Computer Science, 2005
Sean Furlong, M.A.
Lecturer, Center for Leadership Education, 2013
Mary Furst, M.S.
Lecturer, Center for Leadership Education
Robert E. Glaser, Ph.D.
Lecturer, Electrical and Computer Engineering, 1987
An Goffin, Ph.D.
Lecturer, Chemical and Biomolecular Engineering, 2008
Jeremy Gorelick, M.S.
Lecturer, Center for Leadership Education
Robert Graham, M.S.
Lecturer, Center for Leadership Education, 2014
Christine Grillo, M.S.
Lecturer, Center for Leadership Education
Eileen Haase, Ph.D.
Senior Lecturer, Biomedical Engineering, 2003
Margaret Hart, M.S.
Lecturer, Center for Leadership Education, 2017
Jason Heiserman, Ph.D.
Lecturer, Center for Leadership Education, 2009
Illysa Izenberg, MBA
Lecturer, Center for Leadership Education, 2010
Michael Jacobs
Lecturer, Computer Science, 1999
Christopher Jeffers, Ph.D.
Lecturer, Center for Leadership Education, 2015

Other Faculty Appointments

Lecturers
Michael Agronin, M.S.
Lecturer, Center for Leadership Education, 2012
Lawrence Aronhime, M.B.A.
Senior Lecturer, Center for Leadership Education, 2001
Prashant Athavale, Ph.D.
Lecturer, Applied Mathematics and Statistics, 2015
David Audley, Ph.D.
Senior Lecturer, Applied Mathematics and Statistics, 1997
Soraya Bailey, M.Sc.
Lecturer, Mechanical Engineering, 2016
Justin Beauchamp, M.S.
Lecturer, Center for Leadership Education, 2015
Jenny Bernstein, M.P.H.
Lecturer, Center for Leadership Education, 2014
Beryl Castello, Ph.D.
Senior Lecturer, Applied Mathematics and Statistics, 2004
Xin Chen, Ph.D.
Lecturer, Civil Engineering, 2012
Joel Coffman, Ph.D
Lecturer, Information Security Institute
Susan Conley, M.S.
Lecturer, Center for Leadership Education, 2016
Lise Dahuron, Ph.D.
Lecturer, Chemical and Biomolecular Engineering, 2007
Laura Davis, M.A.
Lecturer, Center for Leadership Education, 2011
Lucas deMelo, Ph.D.
Lecturer, Civil Engineering, 2012
Marci De Vries, M.A.
Lecturer, Center for Leadership Education, 2011
Kevin Dungay, Ph.D.
Senior Lecturer, Center for Leadership Education, 1998
David Fisher, J.D.
Lecturer, Center for Leadership Education, 2001
Mark Franceschini
Senior Lecturer, Center for Leadership Education, 2000
Peter Fröhlich, Ph.D.
Senior Lecturer, Computer Science, 2005
Sean Furlong, M.A.
Lecturer, Center for Leadership Education, 2013
Mary Furst, M.S.
Lecturer, Center for Leadership Education
Robert E. Glaser, Ph.D.
Lecturer, Electrical and Computer Engineering, 1987
An Goffin, Ph.D.
Lecturer, Chemical and Biomolecular Engineering, 2008
Jeremy Gorelick, M.S.
Lecturer, Center for Leadership Education
Robert Graham, M.S.
Lecturer, Center for Leadership Education, 2014
Christine Grillo, M.S.
Lecturer, Center for Leadership Education
Eileen Haase, Ph.D.
Senior Lecturer, Biomedical Engineering, 2003
Margaret Hart, M.S.
Lecturer, Center for Leadership Education, 2017
Jason Heiserman, Ph.D.
Lecturer, Center for Leadership Education, 2009
Illysa Izenberg, MBA
Lecturer, Center for Leadership Education, 2010
Michael Jacobs
Lecturer, Computer Science, 1999
Christopher Jeffers, Ph.D.
Lecturer, Center for Leadership Education, 2015
Reuben Johnston, M.S.
Lecturer, Information Security Institute, 2016

George Kalb, M.S.
Lecturer, Computer Science, 2000

Michael Karweit, Ph.D.
Senior Lecturer, Environmental Health and Engineering

Leslie Kendrick, M.B.A.
Senior Lecturer, W.P. Center for Leadership Education, 2000

Michael Kociemba, M.S.
Lecturer, JHU Information Security Institute, 2012

Sheela Kosaraju, J.D.
Lecturer, Computer Science, 2008

Andrew F. Kulanko, M.S.
Senior Lecturer, Center for Leadership Education, 2001

Andreas Lares, M.A.
Lecturer, Center for Leadership Education

Harold Lehmann, M.D., Ph.D.
Lecturer, Computer Science, 1993

Seth LeJacq, Ph.D.
Lecturer, Center for Leadership Education

Annette Leps, M.B.A.
Senior Lecturer, Center for Leadership Education, 2006

Xiangyang Li, Ph.D.
Senior Lecturer, JHU Information Security Institute, 2012

Denise Link-Farajali, Ed.M.
Lecturer, Center for Leadership Education, 2011

Elizabeth Logsdon, Ph.D.
Lecturer, Engineering for Professionals

David Mahoney, M.S.
Lecturer, Center for Leadership Education

John Matteo, M.S.E.
Lecturer, Civil Engineering, 2008

Michael Mattia, M.S.
Lecturer, Center for Leadership Education

Anil Maybhate, Ph.D.
Lecturer, Engineering for Professionals

Timothy McGee, Ph.D.
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Edmund Meade, M.A.
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John Miller, Ph.D.
Lecturer, Applied Mathematics and Statistics, 2015

Lindsay Monti, J.D.
Lecturer, Center for Leadership Education

Charlotte O’Donnell, M.F.A.

Lecturer, Center for Leadership Education, 2009

Martin Ozimek, Ph.D.
Lecturer, Mechanical Engineering, 2011

Heather Parker, Ph.D.
Lecturer, Center for Leadership Education

Carmo Pereira, Ph.D.
Senior Lecturer, Chemical and Biomolecular Engineering, 2016

Kerri Phillips, Ph.D.
Lecturer, Mechanical Engineering, 2015

Luc Phinney,
Lecturer, Mechanical Engineering, 2015

Marco Priolo, M.S.
Lecturer, Center for Leadership Education, 2014

Keith Quesenberry, M.S.
Senior Lecturer, Center for Leadership Education, 2012

Brian Rakes, J.D.
Lecturer, Center for Leadership Education, 2012

Julie Reiser, Ph.D.
Senior Lecturer, Center for Leadership Education, 2007

Joshua Reiter, Ed.D.
Senior Lecturer, Center for Leadership Education, 2000

Eric Rice, Ph.D.
Senior Lecturer, Center for Leadership Education, 2006

Elaine Richman, Ph.D.
Lecturer, Center for Leadership Education

Yury Ronzhes, Ph.D.
Lecturer, Mechanical Engineering, 2008

Daniel Saalfeld, M.S.
Lecturer, Center for Leadership Education, 2016

Tiffany Sanchez, M.S.
Lecturer, Center for Leadership Education

Douglas S. Sandhaus, J.D.
Senior Lecturer, Center for Leadership Education, 2002

Rachel Sangree, Ph.D.
Lecturer, Civil Engineering, 2009

William Sander, J.D.
Lecturer, JHU Information Security Institute, 2012

Gary Schultz, Ph.D.
Lecturer, Applied Mathematics and Statistics, 2013

Pamela Sheff, Ph.D.
Senior Lecturer, Center for Leadership Education, 2006

William Smedick, Ed.D.
Senior Lecturer, Center for Leadership Education, 2007

Sarah Smith, M.A.
Lecturer, Center for Leadership Education, 2016
Justin Spivey, M.S.
Lecturer, Civil Engineering, 2015

Dennis Sullivan, M.S.
Lecturer, Center for Leadership Education

Federico Torcaso, Ph.D.
Senior Lecturer, Applied Mathematics and Statistics, 2002

Adam Treiser, J.D.
Lecturer, Center for Leadership Education, 2016

Damon Tull, Ph.D.
Lecturer, Center for Leadership Education, 2016

Tamara Warren-Chinyani, Ph.D.
Lecturer, Center for Leadership Education

Caroline Wilkins, Ph.D.
Lecturer, Center for Leadership Education, 2012

Justin Williams, Ph.D.
Senior Lecturer, Environmental Health and Engineering, 1999

Orla Wilson, Ph.D.
Senior Lecturer, Materials Science and Engineering, 2008

Joint Appointments

Steven An, Ph.D.
Associate Professor, School of Public Health
Chemical and Biomolecular Engineering, 2014

Stephen Belkoff, Ph.D.
Associate Professor, Orthopedic Surgery (Medicine)
Mechanical Engineering 2001

Emad Boctor, Ph.D.
Assistant Professor, Radiology and Radiological Sciences (Medicine)
Computer Science, 2009
Electrical and Computer Engineering, 2013

Paul Bottomly, Ph.D.
Professor, Radiology (Medicine)
Electrical and Computer Engineering 2000

Kit Bowen, Ph.D.
Professor, Chemistry (KSAS)
Materials Science and Engineering, 2014

Patrick Breysse, Ph.D.
Professor, Environmental Health (Public Health)
Chemical and Biomolecular Engineering

Colin Broholm, Ph.D.
Professor, Physics and Astronomy
Materials Science and Engineering

Chia-Ling Chien, Ph.D.
Professor, Physics and Astronomy (KSAS)
Materials Science and Engineering

Michael Choti, Ph.D.
Associate Professor, Surgery, School of Medicine

Michael Edidin, Ph.D.
Professor, Biology (Arts and Sciences)

Materials Science and Engineering, 2005

Jennifer Elisseeff, Ph.D.
Professor, Biomedical Engineering (Medicine)
Chemical and Biomolecular Engineering, 2012
Materials Science and Engineering, 2014

Laura Ensign-Hodges, Ph.D.
Assistant Professor, Ophthalmology-Nanomedicine, School of Medicine, 2016

Howard Fairbrother, Ph.D.
Professor, Chemistry (KSAS)
Materials Science and Engineering, 2014

Liliana Florea, Ph.D.
Assistant Professor, General Internal Medicine (Medicine)
Computer Science, 2013

Eric Frey, Ph.D.
Professor, Radiology (Medicine)
Electrical and Computer Engineering, 2010

Peter Gehlbach, Ph.D.
Ophthalmology, School of Medicine
Electrical and Computer Engineering, 2014

Daniele Gilkes, Ph.D.
Chemical and Biomolecular Engineering, 2015

Warren Grayson, M.D.
Assistant Professor, Biomedical Engineering, (Medicine);
Materials Science and Engineering, 2014

Jordan Green, M.D.
Associate Professor, Biomedical Engineering, (Medicine);
Materials Science and Engineering, 2014
Chemical and Biomolecular Engineering, 2017

Justin Hanes, Ph.D.
Professor, Ophthalmology (Medicine)
Chemical and Biomolecular Engineering, 2015

John Isaacs, Ph.D.
Professor, Chemical Therapeutics (Medicine)
Chemical and Biomolecular Engineering, 2007

Robert Ivkov, M.D.
Associate Professor, Radiation, Oncology and Molecular Radiation (Medicine);
Materials Science and Engineering, 2014
Mechanical Engineering, 2016

Lynn Jones, M.D.
Associate Professor, Orthopedic Surgery, School of Medicine
Materials Science and Engineering, 2015

Rangaraman Kannan, Ph.D.
Professor, Center for Nanomedicine (Medicine)
Materials Science and Engineering, 2011

Seulki Lee, M.D.
Assistant Professor, Radiology, School of Medicine
Materials Science and Engineering, 2015

Stuart W. Leslie, Ph.D.
Professor, History of Science and Technology (Arts and Sciences)  
Environmental Health and Engineering, 1997

Xingde Li, M.D.  
Professor, Biomedical Engineering, School of Medicine  
Electrical and Computer Engineering, 2014

Mihaela Pertea, M.D.  
Assistant Professor, Department of Medicine, School of Medicine  
Computer Science, 2015

Kenneth Pienta, M.D.  
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Chemical and Biomolecular Engineering, 2014

Martin Pomper, M.D., Ph.D.  
Professor, Radiology (Medicine)  
Chemical and Biomolecular Engineering, 2016

Aleksander S. Popel, Ph.D.  
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Chemical and Biomolecular Engineering, 2015

Arman Rahmim, Ph.D.  
Assistant Professor, Radiology (Medicine)  
Electrical and Computer Science 2010

Kannan Rangeramanujam, M.D.  
Professor, Department of Ophthalmology (Medicine);  
Materials Science and Engineering, 2014

Mark Robbins, Ph.D.  
Professor, Physics and Astronomy (Arts and Sciences)  
Mechanical Engineering 2001

Douglas Robinson, M.D.  
Professor, School of Medicine  
Chemical and Biomolecular Engineering, 205

Steven Salzberg, Ph.D.  
Professor, Internal Medicine (Medicine)  
Computer Science, 2011

Jeffrey Siewersdson, Ph.D.  
Professor, Biomedical Engineering (Medicine);  
Computer Science, 2010

J. Webster Stayman, Ph.D..  
Assistant Professor, Biomedical Engineering, School of Medicine  
Electrical and Computer Engineering, 2015

Dan Stoianovici, Ph.D.  
Professor, Urology (Medicine)  
Mechanical Engineering, 2005

James Taylor, Ph.D.  
Associate Professor, Biology  
Computer Science 2014

Nitish Thakor, Ph.D.  
Professor, Biomedical Engineering (Medicine)  
Electrical and Computer Engineering, 2007

John Tovar, Ph.D.  
Associate Professor, Chemistry;  
Materials Science and Engineering, 2014

Benjamin Tsui, Ph.D.  
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Electrical and Computer Engineering 2006

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Professor, Biomedical Engineering (Medicine)  
Director, Center for Cardiovascular Bioinformatics and Modeling,  
Computer Science 1991;  
Electrical and Computer Engineering, 2003

Thomas Woolf  
Professor, Department of Physiology  
Computer Science, 2013

Kevin Yerema, Ph.D.  
Associate Professor, Biomedical Engineering (Medicine)  
Chemical and Biomolecular Engineering, 2017

Hui Zhang, Ph.D.  
Professor, Pathology (Medicine)  
Chemical and Biomolecular Engineering, 2017

Jin Zhang, M.D.  
Professor, Pharmacology and Molecular Sciences, School of Medicine  
Chemical and Biomolecular Engineering, 2015

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CATALOG ARCHIVES

- 2016-17 Catalog Archive (HTML) (http://e-catalog.jhu.edu/archive/2016-17) (PDF) (http://e-catalog.jhu.edu/archive/2016-17.pdf)
- 2007-09 Catalog Archive (PDF) (http://e-catalog.jhu.edu/archive/2007-09.pdf)
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