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.

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

I. Required Courses Outside the Department

Nine credits of additional N, Q, or E courses * 9

* Courses instructed within the psychology department (AS.200.XXX) or counting toward the Psychology major may not be used for this requirement.

II. Required Courses Within the Department

AS.200.200 Research Methods in Experimental Psychology 4
AS.200.201 Design & Analysis for Experimental Psychology 4

Select three of the following: 9

AS.200.101 Introduction To Psychology
AS.200.110 Introduction to Cognitive Psychology
or AS.050.101 Cognition
AS.200.132 Introduction to Developmental Psychology
AS.200.133 Introduction to Social Psychology
AS.200.141 Foundations of Brain, Behavior and Cognition

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.

Please see Requirements for a Bachelor’s Degree. (http://e-catalog.jhu.edu/undergrad-students/academic-policies/requirements-for-a-bachelors-degree)
**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>Freshman</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Required 100-level</td>
<td>3</td>
<td>Two Required 100-level</td>
<td>6</td>
</tr>
<tr>
<td>Psychology course</td>
<td>3</td>
<td>Psychology course</td>
<td></td>
</tr>
<tr>
<td>NQE elective required for major</td>
<td>3</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.200.201 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>200- through 400-level Psychology course</td>
<td>3</td>
<td>200- through 400-level Psychology course</td>
<td>3</td>
</tr>
<tr>
<td>NQE elective required for major</td>
<td>3</td>
<td></td>
<td></td>
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</tbody>
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<table>
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<tr>
<th>Junior</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<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>Independent Academic Work</td>
<td>3</td>
<td>NQE elective required for major</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>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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AS.200.101</td>
<td>Introduction To Psychology</td>
</tr>
<tr>
<td>AS.200.110</td>
<td>Introduction to Cognitive Psychology</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>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>One psychology course at any level</td>
<td>3</td>
</tr>
<tr>
<td>Two psychology courses at the 300 or 600 level *</td>
<td>6</td>
</tr>
</tbody>
</table>

* 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.

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 further information on graduate study in psychology, contact the Academic Program Coordinator for the Department of Psychological and Brain Sciences.

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-Faruqee
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 McKhann  
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.200.120. 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.200.130. 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.200.140. 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.200.150. 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.200.160. 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.200.170. 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 project, 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.
The 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.
This is a survey course focused on theory and research on human
personality. Topics include personality traits, motivation, unconscious
processes, self-regulation, cognitive and behavioral aspects of
personality, biological and evolutionary influences on personality, and
dysfunctional manifestations of personality.
Instructor(s): C. Howe
Area: 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 these 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 the benefits that result from possessing positive attributes. The course will discuss the psychological and physical well-being. This course will review the research on positive human attributes.
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 on 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.200.313. 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.

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 courteship 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 exploration 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 neurodevelopmental 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 some 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: Prereqs: ( AS.200.141 OR AS.080.305 ) 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 neuroscientific 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.200.501. Psychological Research - Freshmen. 3.0 Credits.
S/U grading only.
Instructor(s): Staff.

AS.200.502. Psychology Research-Freshmen. 0.0 - 3.0 Credits.
Instructor(s): Staff.

AS.200.503. Psychological Research - Sophomores. 3.0 Credits.
S/U grading only
Instructor(s): Staff.

AS.200.504. Psychology Research-Sophomores. 0.0 - 3.0 Credits.
Grading Satisfactory/ Unsatisfactory only.
Instructor(s): Staff.

AS.200.506. Psychological Readings. 0.0 - 3.0 Credits.
Instructor(s): Staff.

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 neuropsychopathological 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 neuropsychopathological 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 undergraduates in the psychology and neuroscience program.
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.

Research seminar covering topics related to neural circuits for learning. Instructor(s): K. Kuchibhotla.

Graduate students only. Instructor(s): C. Moss; M. Gallagher; P. Holland; P. Janak.

Graduate Students Only. Instructor(s): M. Bedny.

Graduate Students Only. Instructor(s): S. Mysore.

Graduate Students Only. Instructor(s): C. Moss.

Graduate Students Only. Instructor(s): P. Janak.

Research seminar covering topics related to perception & mind. Instructor(s): C. Firestone.

Research seminar covering topics on the behavioral and brain basis of perception in dynamic scenes. Instructor(s): J. Fischer.

Research seminar covering topics on cognitive and systems neuroscience. Instructor(s): C. Honey.

Research seminar covering topics on the behavioral neurophysiology of the hippocampal formation. Instructor(s): J. Knieriem.

Graduate students only. Permission Required. Instructor(s): S. Courtney-Faruqee.

Instructor(s): S. Courtney-Faruqee.

AS.200.848. Current Advances in Psychological and Brain Sciences.
Introduces advanced research topics to graduate students (as well as faculty) through a series of speakers and discussions. Instructor(s): J. Flombaum.

AS.200.849. Teaching Practicum.
All candidates are required to obtain special experience in various aspects of undergraduate teaching. Graduate students only. Instructor(s): L. Feigenson.

AS.200.850. Advanced Teaching Practicum.
Instructor(s): L. Feigenson.

AS.200.899. Psychology Internship/Practicum.
The Ph.D. program in Psychological & Brain Sciences trains students in psychological science through general and advanced seminars in the various subdisciplines of psychology and by active engagement in research. Registration in this course will be accompanied by the student’s participation in an internship/practicum experience. Instructor(s): L. Feigenson.
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 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.

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 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.

Instructor’s permission required. (Also offered as AS.050.312.)
Instructor(s): S. Park
Area: Natural Sciences, Social and Behavioral 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.

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 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.
**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.