Master of Science in Engineering Management

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

Students in the MSEM program will take ten courses to fulfill degree requirements, with the following guidelines:

- Five advanced courses in the engineering/technical concentration
- Five advanced courses in the management concentration, in addition to a 2-semester seminar
- Students must graduate with a 3.0 GPA in the management courses and also in the technical courses
- Courses must be at the 400-level or higher
- Departments sponsoring technical concentrations may impose stricter requirements for course work within the concentration

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 undergraduate or 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 five management courses together:

- EN.662.611 Accounting and Finance (fall)
- EN.662.651 Marketing Communication and Strategy (spring)
- EN.662.632 Business Law and Intellectual Property (spring or Intersession)
- EN.662.642 Management and Leadership (spring)
- EN.662.692 Venture Planning to New Venture Creation (fall)

In addition, all MSEM students are required to attend the MSEM Seminar (EN.662.811 M.S. in Engineering Management Seminar/EN.662.812 M.S. in Engineering Management (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.

Technical Concentrations

In addition to fulfilling the management concentration requirements, MSEM students must complete the requirements for one of fourteen technical concentrations. These are:

- Biomaterials
- 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)

Prerequisites

- UG calculus, chemistry, biology, physics and introductory biomaterials course equivalent to EN.510.316 Biomaterials I

Required Courses (3)

- EN.510.606 Chem Bio Properties/Mat
- EN.510.607 Biomaterials II
- EN.510.621 Biomolecular Materials I - Soluble Proteins and Amphiphiles

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 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>
<tr>
<td>EN.510.403</td>
<td>Materials Characterization</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.405</td>
<td>Materials Science of Energy Technologies</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.422</td>
<td>Micro and Nano Structured Materials &amp; Devices</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.426</td>
<td>Biomolecular Materials I - Soluble Proteins and Amphiphiles</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.428</td>
<td>Material Science Laboratory I</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.429</td>
<td>Material Science Laboratory II</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.430</td>
<td>Biomaterials Lab</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.431</td>
<td>Biocompatibility of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.456</td>
<td>Introduction to Surface Science</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.604</td>
<td>Mech Props of Materials</td>
<td>3</td>
</tr>
<tr>
<td>EN.510.605</td>
<td>Electrical, Optical, and Magnetic Properties</td>
<td></td>
</tr>
<tr>
<td>EN.510.606</td>
<td>Chem Bio Properties/Mat</td>
<td></td>
</tr>
<tr>
<td>EN.510.607</td>
<td>Biomaterials II</td>
<td></td>
</tr>
<tr>
<td>EN.510.608</td>
<td>Electrochemistry</td>
<td></td>
</tr>
<tr>
<td>EN.510.611</td>
<td>Solid State Physics</td>
<td></td>
</tr>
<tr>
<td>EN.510.612</td>
<td>Solid State Physics</td>
<td></td>
</tr>
<tr>
<td>EN.510.617</td>
<td>Adv Topics Biomaterials</td>
<td></td>
</tr>
<tr>
<td>EN.510.619</td>
<td>Biopolymers Synthesis</td>
<td></td>
</tr>
<tr>
<td>EN.510.624</td>
<td>X-Ray Scattering, Diffraction and Imaging</td>
<td></td>
</tr>
<tr>
<td>EN.510.657</td>
<td>Materials Science of Thin Films</td>
<td></td>
</tr>
<tr>
<td>EN.510.665</td>
<td>Adv Tpcs Thermodymanics</td>
<td></td>
</tr>
</tbody>
</table>

Courses not on this list can be used at the advisor’s discretion.

Civil Engineering

(Sponsored by the Department of Civil Engineering)

The Civil Engineering concentration for the Master of Science in Engineering Management consists of five courses, with the following guidelines:

Required Courses
- EN.560.730 Finite Element Methods

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)

Communications Science

(Sponsored by the Department of Electrical & Computer Engineering)

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.520.401</td>
<td>Basic Communication</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.410</td>
<td>Fiber Optics &amp; Devices</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.435</td>
<td>Digital Signal Processing</td>
<td>4</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.520.619</td>
<td>Optical Communications</td>
<td></td>
</tr>
<tr>
<td>EN.520.646</td>
<td>Wavelets &amp; Filter Banks</td>
<td></td>
</tr>
<tr>
<td>EN.520.651</td>
<td>Random Signal Analysis</td>
<td></td>
</tr>
<tr>
<td>EN.520.652</td>
<td>Filtering &amp; Smoothing</td>
<td></td>
</tr>
<tr>
<td>EN.520.666</td>
<td>Information Extraction</td>
<td></td>
</tr>
<tr>
<td>EN.520.735</td>
<td>Sensory Information Processing</td>
<td></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)

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)

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)

Prerequisites
- UG calculus, chemistry and physics; biology is recommended

Required Courses (1)
- EN.510.601 Structure of Materials

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>
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<tbody>
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<tr>
<td>EN.510.403</td>
<td>Materials Characterization</td>
<td>3</td>
</tr>
</tbody>
</table>
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  Materials Science Laboratory II  3
EN.510.430  Biocompatibility of Materials  3
EN.510.456  Introduction to Surface Science  3
EN.510.604  Mech Props of Materials  3
EN.510.605  Electrical, Optical, and Magnetic Properties  3
EN.510.606  Chem Bio Properties/Mat  3
EN.510.607  Materials Science of Thin Films  3
EN.510.608  Electrochemistry  3
EN.510.611  Solid State Physics  3
EN.510.612  Solid State Physics  3
EN.510.619  Biopolymers Synthesis  3
EN.510.624  X-Ray Scattering, Diffraction and Imaging  3
EN.510.657  Mechanical Engineering (Sponsored by the Department of Mechanical Engineering)

Alternative selections can be made at the advisor’s discretion.

Mechanical Engineering
(Sponsored by the Department of Mechanical Engineering)

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 and the Department of Materials Science & Engineering)

Required Courses
EN.510.601  Structure of Materials
EN.510.604  Mech Props of Materials

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:

EN.510.403  Materials Characterization  3
EN.510.428  Material Science Laboratory I  3
EN.530.405  Mechanics of Solids and Structures  3
EN.530.414  Computer-Aided Design  3
EN.530.416  Advanced Mechanical Design  3
EN.530.418  Aerospace Structures & Materials  3
EN.530.454  Manufacturing Engineering  3
EN.510.602  Thermodynamics of Materials  3
EN.510.603  Phase Transformations  3
EN.530.612  Computational Solid Mechanics  3

Alternative selections can be made at the advisor’s discretion.

Nano-Biotechnology
(Sponsored by the Department of Materials Science & Engineering)

Prerequisites
- UG calculus, chemistry, biology, physics and introductory biomaterials course equivalent to EN.510.316

Required Courses (3)
EN.530.422  Biomaterials II (PR: EN.510.316 or permission)
EN.500.619  (PR: Permission of the instructor)

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</td>
<td>3</td>
</tr>
<tr>
<td>Electives: suggest one</td>
<td></td>
<td>Electives: suggest one</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Credits: 3

List of Pre-approved Electives

EN.510.400  Introduction to Ceramics  3
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  Materials Science Laboratory II  3
EN.510.430  Biocompatibility of Materials  3
EN.510.431  Biocompatibility of Materials  3
EN.510.456  Introduction to Surface Science  3
EN.510.604  Mech Props of Materials  3
EN.510.605  Electrical, Optical, and Magnetic Properties  3
EN.510.606  Chem Bio Properties/Mat  3

Johns Hopkins University - 2013-2014
EN.510.607 Biomaterials II
EN.510.608 Electrochemistry
EN.510.611 Solid State Physics
EN.510.612 Solid State Physics
EN.510.617 Adv Topics Biomaterials
EN.510.619 Biopolymers Synthesis
EN.510.624 X-Ray Scattering, Diffraction and Imaging
EN.510.657 Materials Science of Thin Films
EN.510.665 Adv Tpcs Thermodymanics

Alternative selections can be made at the advisor’s discretion.

**Nanomaterials and Nanotechnology**
(Sponsored by the Department of Materials Science & Engineering
(http://e-catalog.jhu.edu/archive/2013-14/departments-program-requirements-and-courses/engineering/materials-science-engineering))

**Prerequisites**
- UG calculus, chemistry, and physics

**Required Courses (2)**
EN.510.422 Micro and Nano Structured Materials & Devices 3
EN.500.619 (PR: Permission of the Instructor)

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**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN.510.422 Micro and Nano Structured Materials &amp; Devices</td>
<td>3</td>
</tr>
<tr>
<td>EN.500.619 (Required)</td>
<td></td>
</tr>
</tbody>
</table>

Electives in Spring: suggest two

See list of pre-approved elective courses or courses off list by petition

Total Credits: 3

**List of Pre-approved Electives**

EN.510.400 Introduction to Ceramics 3
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 Materials Science Laboratory I 3
EN.510.429 Materials Science Laboratory II 3
EN.510.430 Biopolymers Synthesis 3
EN.510.431 Biocompatibility of Materials 3
EN.510.456 Introduction to Surface Science 3
EN.510.604 Mech Props of Materials 3
EN.510.605 Electrical, Optical, and Magnetic Properties 3
EN.510.606 Chem Bio Properties/Mat 3
EN.510.607 Biomaterials II 3
EN.510.608 Electrochemistry 3
EN.510.611 Solid State Physics 3
EN.510.612 Solid State Physics 3
EN.510.617 Adv Topics Biomaterials 3
EN.510.619 Biopolymers Synthesis 3
EN.510.624 X-Ray Scattering, Diffraction and Imaging 3
EN.510.657 Materials Science of Thin Films 3
EN.510.665 Adv Tpcs Thermodymanics 3

**Operations Research**
(Sponsored by the Department of Applied Mathematics & Statistics
(http://e-catalog.jhu.edu/archive/2013-14/departments-program-requirements-and-courses/engineering/applied-mathematics-statistics))

**Prerequisites**
Calculus-based background in Probability and Statistics. Students wishing to strengthen their background in this area may enroll in EN.550.420 Intro To Probability and/or EN.550.430 Introduction to Statistics, but these courses may not be used in fulfillment of this concentration’s requirements.

**Required Courses (3)**
EN.570.495 Mathematical Foundations For Public Decision Making 3
or EN.550.661 Foundations of Optimization 3
EN.570.497 Risk and Decision Analysis 3
EN.570.608 Data Analytics for Engineering, Policy Analysis and Management 0-4
or EN.550.400 Mathematical Modeling and Consulting 3

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.

EN.570.493 Economic Foundations For Public Decision Making 3
EN.570.496 Urban and Environmental Systems 3
EN.550.662 Optimization Algorithms 3
EN.550.426 Introduction to Stochastic Processes 4
EN.550.427 Stochastic Processes and Applications to Finance 4
EN.550.433 Monte Carlo Methods 3
EN.550.463 Network Models in Operations Research 4
Alternative selections can be made at the advisor’s discretion.

**Probability and Statistics**
*(Sponsored by the Department of Applied Mathematics & Statistics)*
(http://e-catalog.jhu.edu/archive/2013-14/departments-program-requirements-and-courses/engineering/applied-mathematics-statistics)

**Admissions Requirements**
- One upper-division undergraduate course in probability (equivalent to EN.550.420 Intro To Probability)
- One upper-division undergraduate course in mathematical statistics (equivalent to EN.550.430 Introduction to Statistics)

**Curricular Requirements**
Any five (5) 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.550.413</td>
<td>Applied Statistics and Data Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.550.426</td>
<td>Introduction to Stochastic Processes</td>
<td>4</td>
</tr>
<tr>
<td>EN.550.433</td>
<td>Monte Carlo Methods</td>
<td>3</td>
</tr>
<tr>
<td>EN.550.434</td>
<td>Nonparametric Statistics</td>
<td>3</td>
</tr>
<tr>
<td>EN.550.436</td>
<td>Data Mining</td>
<td>4</td>
</tr>
<tr>
<td>EN.550.437</td>
<td>Statistical Learning With Applications</td>
<td>3</td>
</tr>
<tr>
<td>EN.550.439</td>
<td>Time Series Analysis</td>
<td>4</td>
</tr>
<tr>
<td>EN.550.620</td>
<td>Probability Theory I</td>
<td></td>
</tr>
<tr>
<td>EN.550.630</td>
<td>Statistical Theory</td>
<td></td>
</tr>
<tr>
<td>EN.550.631</td>
<td>Statistical Theory II</td>
<td></td>
</tr>
<tr>
<td>EN.550.635</td>
<td>Topics in Bioinformatics</td>
<td></td>
</tr>
<tr>
<td>EN.550.730</td>
<td>Topics In Statistics</td>
<td></td>
</tr>
</tbody>
</table>

**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)*
(http://e-catalog.jhu.edu/archive/2013-14/departments-program-requirements-and-courses/engineering/mechanical-engineering) and *(the Department of Electrical & Computer Engineering)*
(http://e-catalog.jhu.edu/archive/2013-14/departments-program-requirements-and-courses/engineering/electrical-computer-science)

**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>EN.520.491</td>
<td>CAD Design of Digital VLSI Systems I (Seniors/Grads)</td>
<td>3</td>
</tr>
<tr>
<td>EN.530.421</td>
<td>Mechatronics</td>
<td>3</td>
</tr>
<tr>
<td>EN.520.448</td>
<td>Electronics Design Lab</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.530.651</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN.520.691</td>
<td>Optoelectronic Microsystems</td>
<td></td>
</tr>
</tbody>
</table>

Courses not on this list can be used at the advisor’s discretion.

**Environmental Systems Analysis, Economics and Public Policy**
*(Sponsored by the Department of Geography & Environmental Engineering)*
(http://e-catalog.jhu.edu/archive/2013-14/departments-program-requirements-and-courses/engineering/geography-environmental-engineering)

**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 Public Decision Making 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 Mathematical Foundations For Public Decision Making and EN.570.497 Risk and Decision Analysis
- **Policy**—acceptable courses include EN.570.659 Environmental Policy Analysis, EN.570.427, EN.570.607 Energy Policies & Plan Models, and EN.570.616

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>
<th>Course Title</th>
<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>Multiobject Programming and Planning</td>
<td></td>
</tr>
<tr>
<td>EN.570.676</td>
<td>Stochastic Programming</td>
<td></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 400-level or above.
- 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 Mass Transfer in Environmental Engineering, 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 http://eng.jhu.edu/wse/cle/page/our_people

Faculty
Program Directors
Lawrence Aronhime
Associate Director and Senior Lecturer, Director of Entrepreneurship & Management Program: accounting, finance, entrepreneurship, technology commercialization.

Eric Rice
Associate Director and Senior Lecturer, Director of Masters of Science in Engineering Management Program: organizational behavior, social entrepreneurship, management, negotiation and conflict management, leadership, public speaking, professional writing.

Senior Lecturer
Annette Leps
Senior Lecturer: accounting, finance, management.

Pamela Sheff
Senior Lecturer: business and technical communication, marketing, public relations, science and scientific writing, oral presentations, entrepreneurship.

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

Courses
EN.662.611. Accounting and Finance.
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): A. Leps.

Business Law and Intellectual Property 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; contracts; 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. For M.S. in Engineering Management only; no audits.
Instructor(s): A. Lebbos.

EN.662.642. Management and Leadership.
Management and Leadership is a case, experiential and research based course intended to introduce participants to issues and solutions related to growing and managing businesses with an emphasis on entrepreneurial enterprises. The course focuses on managerial decision-making and organization building through topics that include planning and managing strategic change; finding competitive advantage; making informed decisions; dealing with uncertainty; negotiating collaborative settlements; managing/leading projects, teams and professionals; networking and forming strategic alliances; valuing differences; creating and maintaining organizational cultures; and devising performance measures. Additionally, participants master aspects of management communication as they address course content. For M.S. in Engineering Management only; graded (not P/F); no audits.
Instructor(s): E. Rice.

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): P. Sheff.

EN.662.692. Venture Planning to New Venture Creation.
Venture Planning 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.

EN.662.801. MSEM Seminar.

Professional development seminar for engineering management students featuring outside speakers with engineering management experience. For M.S. in Engineering Management only; P/F only; no audits.
Instructor(s): E. Rice; P. Sheff.

Professional development seminar for engineering management students featuring outside speakers with engineering management experience. For M.S. in Engineering Management only; P/F only; no audits.
Instructor(s): E. Rice.