JOHNS HOPKINS UNIVERSITY

2007-2008
SECOND TERM
SCHEDULE
OF
ARTS AND
SCIENCES
AND
ENGINEERING COURSES

Office of the Registrar November, 2007
GRADUATION RATES
In compliance with the federal Student Right-to-Know Act of 1990 (Public Law 101-542, Sec.668.46), Johns Hopkins University provides the following information to prospective and currently enrolled undergraduates in the Schools of Arts and Sciences and Engineering:

Entering Freshman Class, September, 2000: 998
% of freshman returning as sophomores: 96 %
% graduating within 4 years: 83 %
% graduating within 5 years: 91 %
% graduating within 6 years: 93 %
SCHEDULE INFORMATION

This schedule includes all Arts & Sciences and Engineering Courses expected to be offered in the second term and is based upon information received from the departments through October. This schedule presents the following information:

1. The course number includes both a departmental indicator and a course indicator. The number preceding the decimal identifies the department offering the course:

ZANVYL KRIEGER SCHOOL of ARTS & SCIENCES

<table>
<thead>
<tr>
<th>Department</th>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>African Studies</td>
<td>362</td>
<td>Latin American Studies</td>
<td>361</td>
</tr>
<tr>
<td>Anthropology</td>
<td>070</td>
<td>Military Science</td>
<td>374</td>
</tr>
<tr>
<td>Art</td>
<td>371</td>
<td>Programs - Museums &amp; Society</td>
<td>389</td>
</tr>
<tr>
<td>Behavioral Biology</td>
<td>290</td>
<td>Music</td>
<td>376</td>
</tr>
<tr>
<td>Biology</td>
<td>020</td>
<td>Near Eastern Studies</td>
<td>130</td>
</tr>
<tr>
<td>Biophysics</td>
<td>250</td>
<td>Neuroscience</td>
<td>080</td>
</tr>
<tr>
<td>Chemistry</td>
<td>030</td>
<td>Philosophy</td>
<td>150</td>
</tr>
<tr>
<td>Classics</td>
<td>040</td>
<td>Physics &amp; Astronomy</td>
<td>171</td>
</tr>
<tr>
<td>Cognitive Science</td>
<td>050</td>
<td></td>
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<tr>
<td>Earth &amp; Planetary Science</td>
<td>270</td>
<td>Political Science</td>
<td>190</td>
</tr>
<tr>
<td>Economics</td>
<td>100</td>
<td>Psychological &amp; Brain Sciences</td>
<td>200</td>
</tr>
<tr>
<td>English</td>
<td>060</td>
<td>Public Health Studies</td>
<td>230</td>
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<tr>
<td>Filmm and Media Studies</td>
<td>061</td>
<td>Public Policy</td>
<td>195</td>
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<tr>
<td>German and Romance</td>
<td>210</td>
<td>Sociology</td>
<td>230</td>
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<tr>
<td>Languages &amp; Literatures</td>
<td>215</td>
<td>Theatre Arts and Studies</td>
<td>225</td>
</tr>
<tr>
<td>History</td>
<td>100</td>
<td>Writing Seminars</td>
<td>220</td>
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<tr>
<td>History of Art</td>
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GWC WHITING SCHOOL of ENGINEERING

<table>
<thead>
<tr>
<th>Department</th>
<th>Course Number</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>Applied Math &amp; Statistics</td>
<td>360</td>
<td>Biomedical Engineering</td>
<td>580</td>
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<tr>
<td>Chemical &amp; Biomolecular Engr.</td>
<td>375</td>
<td>Chemical Engineering</td>
<td>540</td>
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<tr>
<td>Civil Engineering</td>
<td>373</td>
<td>Computer Science</td>
<td>600</td>
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<tr>
<td>Computer Science</td>
<td>370</td>
<td>Entrepreneurship &amp; Mgmt</td>
<td>600</td>
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<tr>
<td>Electrical &amp; Computer Engr.</td>
<td>378</td>
<td>General Engineering</td>
<td>560</td>
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<tr>
<td>Geography &amp; Environ. Engr.</td>
<td>380</td>
<td>Information Security Institute</td>
<td>650</td>
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<tr>
<td>Information Security Institute</td>
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<tr>
<td>Materials Science &amp; Engr.</td>
<td>377</td>
<td>Mechanical Engineering</td>
<td>530</td>
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<tr>
<td>Mathematics</td>
<td>110</td>
<td>Professional Communication</td>
<td>661</td>
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The number following the decimal identifies the specific course and has the following significance:

Undergraduate Level courses

100-299 Lower division courses
300-499 Upper division courses
500-549 Undergraduate level independent study or research type courses

Graduate Level courses

600-799 Courses normally offered for advanced degree programs. Open to undergraduate students only with permission of the instructor.
800-849 Graduate level independent study, dissertation, and research courses.

2. The code letter in parentheses following each 100-549-course number identifies the broad area of study for the fulfillment of undergraduate distribution requirements.

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

3. The number in parentheses after each 100-499 level course title indicates the undergraduate course credit for the term. Independent Study credits vary and are assigned by the faculty sponsor at the time of grading. Graduate level courses do not carry credits, therefore none are shown for 600-849 level courses.

4. The instructor’s name is indicated in italics following the course title and credits.

5. Prerequisites are usually listed in the schedule. It is best however, to check the AS/EN catalog for a more complete statement of any prerequisite requirements.

6. Meeting times are indicated whenever they are known. TBA indicates that the time of the course will be announced later. If the time does not appear before the first day of classes, please check with the department.

7. Classroom assignments are not made until shortly before the term begins. Please check the Registrar’s home page at http://www.jhu.edu/registrar/schedule.html and click on ‘Room Schedule’ to see a complete listing.

The Johns Hopkins University does not discriminate on the basis of race, color, sex, religion, sexual orientation, national or ethnic origin, age, disability or veteran status in any student program or activity administered by the university or with regard to admission or employment. Defense Department discrimination in ROTC programs on the basis of sexual orientation conflicts with this university policy. The university is committed to encouraging a change in the Defense Department policy.

Questions regarding Title VI, Title IX and Section 504 should be referred to Ray Gillian, Office of Equal Opportunity and Affirmative Action, 50 Garland Hall, (410) 58-8075.
INTRODUCTION TO AFRICANA STUDIES (Gosa) Limit 20
Introduction to the content and contours of Africana Studies as a field of study – its genealogy, development, and future challenges. Focuses on historic and contemporary experiences of African-descended peoples in the Americas.

20th CENTURY AFRICAN AMERICAN HISTORY (Hinderer) Limit 20
This survey class is designed to introduce students to the major issues in twentieth century African-American history and culture, including migration, segregation, integration, freedom movements, and artistic production.

RASTAFARI: DREAD, POLITICS, AGENCY (Roberts) Limit 60
From its heretical roots in Jamaica, Garveyism, Ethiopianism, and Pan-Africanism, Rastafari has evolved from a Caribbean theological movement to an international political actor. This course investigates the political theory of Rastafari in order to develop intellectual resources for theorizing the concept of agency in contemporary Africana thought and political theory. Cross-listed with Anthropology

COMMUNITY HEALTH PROMOTION (Fuhr-Holden) Limit 20 This course is an introduction to the salient features of Community Health and Community Health Promotion. Community health promotion is understanding a community, its health status and evolution, its needs and assets, its resources and activities and understanding how the community situation might be changed (and health improved) by action on the part of the community and outside experts. Cross-listed with Public Health Studies

RICHARD WRIGHT AND MODERNISM (Hayes) Limit 25 This seminar provides an examination of the modern black writer Richard Wright. We will interrogate Wright’s critique of modern Western civilization, his interpretation of his black experience, and his involvement in radical politics. The broad purpose of this course is to develop an analysis that accounts for Wright’s philosophical, literary and political commitments. In order to understand his development as a writer and intellectual activist, we will examine his life experiences in South and later in the Communist Party, as well as the complex philosophical ideas that shaped his thinking and writing. Through a critical reading of works by and about Wright, seminar members will examine his contribution to Africana existential thought, which is premised upon concerns of freedom, anguish, resentment, responsibility, embodied agency, sociality, and liberation. Cross-listed with Political Science and Sociology

HISTORY OF AFRICA (Berry) Limit 15 per section
Cross-listed with History

BEGINNING KISWAHILI II (Magumbi) Limit 35 Continuation of 379.152
Cross-listed with Language Teaching Center

MAKING AMERICA: IMMIGRATION, RACE, AND CITIZENSHIP (Shell-Waas) Limit 15 per section
Cross-listed with History

INTERMEDIATE KISWAHILI II (Magumbi) Limit 18 Prereq: 379.151-152 Continuation of 379.251
Cross-listed with Language Teaching Center

THE HISTORY OF AFRICAN AMERICANS AT THE JOHNS HOPKINS UNIVERSITY (Shell-Weiss) Limit 12
Cross-listed with History, Sociology, and Public Health

TOPICS IN AFRICAN HISTORY (Berry) Limit 10
Cross-listed with History
### ANTHROPOLOGY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructors</th>
<th>Credits</th>
<th>Limit</th>
<th>Section</th>
<th>Time</th>
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<tr>
<td>070.132 (H,S)</td>
<td>INVITATION TO ANTHROPOLOGY</td>
<td>Guyer</td>
<td>3</td>
<td>Limit 50</td>
<td>Sec. 01</td>
<td>TTh 12-1:15</td>
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<td>070.224 (H,S)</td>
<td>INDIGENOUS RIGHTS</td>
<td>Guyer</td>
<td>3</td>
<td>Limit 50</td>
<td>Sec. 01</td>
<td>M 1:30-4</td>
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<td>070.244 (H,S)</td>
<td>KINSHIP, FAMILY, AND MARRIAGE</td>
<td>Clough</td>
<td>3</td>
<td>Limit 30</td>
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<td>070.328 (H,S)</td>
<td>THE CONCEPT OF THE PATIENT IN ANTHROPOLOGY</td>
<td>Meyers</td>
<td>3</td>
<td>Limit 25</td>
<td>Sec. 01</td>
<td>TTh 10:30-11:45</td>
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<td>070.334 (H,S)</td>
<td>CHILDREN AND YOUTH IN ARMED CONFLICT</td>
<td>Reynolds</td>
<td>3</td>
<td>Limit 25</td>
<td>Sec. 01</td>
<td>W 1:30-4</td>
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<td>070.392 (H,S)</td>
<td>JUNIOR/SENIOR SEMINAR: ANTHROPOLOGY OF PERSONHOOD</td>
<td>Pandian</td>
<td>3</td>
<td>Limit 25</td>
<td>Sec. 01</td>
<td>Th 1:30-4</td>
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<td>070.398 (H,S)</td>
<td>ALTERNATIVE MEDIA AND POLITICAL IMAGINATION IN LATIN AMERICA</td>
<td>Poole</td>
<td>3</td>
<td>Limit 25</td>
<td>Sec. 01</td>
<td>W 1:30-4</td>
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<td>070.406 (H,S)</td>
<td>ANTHROPOLOGY OF POLITICS: GLOBAL, LOCAL, AND BEYOND</td>
<td>Obarrio</td>
<td>3</td>
<td>Limit 20</td>
<td>Sec. 01</td>
<td>W 4:30-7pm</td>
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<tr>
<td>130.102 (H,S)</td>
<td>INTRODUCTION TO HUMAN PREHISTORY: FROM NEANDERTHALS TO NEOLITHIC</td>
<td>M. Calvani</td>
<td>3</td>
<td>Limit 80</td>
<td>Sec. 01</td>
<td>TTh 12-1:15</td>
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<tr>
<td>130.110 (H,S)</td>
<td>INTRODUCTION TO ARCHAEOLOGY</td>
<td>Schwartz</td>
<td>3</td>
<td>Limit 80</td>
<td>Sec. 01</td>
<td>TTh 10:30-11:45</td>
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<tr>
<td>040.129 (H)</td>
<td>DRINKING PARTIES, HOMOEROTICISM, AND GENDER POLITICS</td>
<td>Yatromanolakis</td>
<td>3</td>
<td>Limit 80</td>
<td>Sec. 01</td>
<td>Th 1:30-2:45</td>
</tr>
</tbody>
</table>
ANTHROPOLOGY

362.201 (H,S)  RASTARARI: DREAD, POLITICS, AGENCY  Roberts  Limit 60  Cross-listed with Africana Studies  Sec. 01  TTh 1:30-2:45

389.340 (H)  CRITICAL ISSUES IN ART CONSERVATION (3)  Balachandran  Limit 20  Cross-listed with Programs in Museums & Society  Sec. 01  Th 1:30-4:30

360.568 (H)  DO MIRACLES (STILL) HAPPEN?  (3)  de Vries  Cross-listed with Philosophy, German and Romance Languages, the Humanities Center, and Political Science  Sec. 01  Th 1:30-4

389.440 (H,S)  WHO OWNS CULTURE?  (3)  Rodini  Limit 12  Cross-listed with Programs in Museums & Society  Sec. 01  T 1:30-4:30

361.354 (H,S)  TRUTH, JUSTICE, AND RECONCILIATION IN LATIN AMERICA  (3)  Rojas-Perez  Dean's Teaching Fellowship Course  Cross-listed with Latin American Studies  Sec. 01  M 1:30-4

070.504  INDEPENDENT STUDY  Staff

070.506  DIRECTED RESEARCH  Staff

070.508  DIRECTED READINGS  Staff

070.552  INTERNSHIP  Staff

070.618  MAKING PUBLIC CULTURE  Pandian  Limit 15  We will focus on the mediation of cultural life through cinema, television, music, art, web technology, and design: on the production, circulation, and consumption of such artifacts. We will engage theory and ethnography to address the politics of representation; vectors of affect, desire, and sensuality; and circuits of cosmopolitan and vernacular affiliation that arise here.  Sec. 01  M 4-5:50pm

070.626  CLOSE READINGS OF A SELECTION OF RECENT ETHNOGRAPHIES  Reynolds  Sec. 01  W 11-12:50

070.630  SENSES OF THE STATE  Poole  This course examines how anthropologists study the temporal, material, and sensory domains through which people make sense of the state as a bureaucratic, governmental, and sovereign presence in their lives.  Sec. 01  T 1:30-3:20

300.624  THE SECULAR LIVES OF GRACE  de Vries  Cross-listed with Philosophy, German and Romance Languages and Literatures, the Humanities Center, and Political Science  Sec. 01  T 1-3:50

131.635  SEMINAR: NEAR EASTERN ARCHAEOLOGY  Schwartz  Limit 15  Cross-listed with Near Eastern Studies  Sec. 01  W 10-11:50

070.802  DISSERTATION RESEARCH  Staff

070.872  DIRECTED READINGS AND RESEARCH  Zuo

070.880  DIRECTED READINGS AND RESEARCH  Yuan

070.884  DIRECTED READINGS AND RESEARCH  Reynolds

070.886  DIRECTED READINGS AND RESEARCH  Poole

070.892  DIRECTED READINGS AND RESEARCH  Khan

ART

371.131  BASIC STUDIO DRAWING I  (2)  Hankin  Limit 15  Attendance at first class is mandatory  This course focuses on developing fundamental drawing skills for the student with little or no previous studio experience. Basic concepts of form and composition will be taught through exercises based on the book, Drawing On The Right Side Of The Brain, and with the aid of still-life setups and live models.  Sec. 01  T 1:30-5

371.133  PAINTING WORKSHOP I  (2)  Hankin/Gruber  Limit 12 per section  Prereq: 371.131 or equivalent  This course offers the fundamentals of oil painting techniques for the serious student with minimal prior studio experience. Observational skills are taught through the extensive use of still-life setups, with particular attention paid to issues of light, color, and composition. Slide lectures and a museum trip give students an art

371.333  PAINTING WORKSHOP II  (2)  Hankin  Limit 12 per section  Prereq: 371.331 or equivalent  This course offers the fundamentals of oil painting techniques for the serious student with minimal prior studio experience. Observational skills are taught through the extensive use of still-life setups, with particular attention paid to issues of light, color, and composition. Slide lectures and a museum trip give students an art
### CARTOONING (3) Chalkley
Limit 15  Not open to freshmen  
A history and practice overview for students of the liberal arts. The conceptual basis and historical development of cartooning is examined in both artistic and social contexts. Class sessions consist of lecture (slides/handouts), exercises, and ongoing assignments. Topics include visual/narrative analysis, symbol & satire, editorial/political cartoons, character development, animation. Basic drawing skills are preferred but not required.  
Cross-listed with the Humanities Center

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<tr>
<th>Sec.</th>
<th>Days/Time</th>
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<tbody>
<tr>
<td>01</td>
<td>M 1:30-4:20</td>
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### BASIC BLACK & WHITE PHOTOGRAPHY (3) Berger
Students must have a 35mm camera with manual aperture and shutter speeds. Attendance at first class is mandatory. Limit 9 per section  
An introduction to the technical and creative process of producing black & white photographs. Working in the darkroom, students learn the fundamentals of film processing and print development. In-class critiques, discussion, and analysis of historic images develop critical vision. With the instructor’s guidance, students work on a project of their choice and produce a portfolio of ten mounted prints.  
Cross-listed with the Humanities Center

<table>
<thead>
<tr>
<th>Sec.</th>
<th>Days/Time</th>
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| 01   | F 2-5  
| 02   | F 10-1  |

### LIFE DRAWING (2) Hankin
Limit 15  Prereq: 371.131 or Perm. Req’d  
An intermediate drawing course focusing on all aspects of the human form. Beginning with infrastructure (skeletal and muscular systems), we will work directly from the model using a variety of media and techniques to address problems in figurative art from the Renaissance to the present.

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<th>Sec.</th>
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### PHOTOSHOP AND THE DIGITAL DARKROOM (3) Berger  
Limit 10  
In this course, students use Photoshop software as a tool to produce images from a fine art perspective, working on projects that demand creative thinking while gaining technical expertise. Run as a companion to traditional photography classes, students will make archival prints, have regular critiques, and attend lectures on the history of the manipulated image and its place in culture. Students will look at art movements which inspire digital artists, including 19th century collage, dada, surrealism, and the zeitgeist of Hollywood films. They will meet with artists who work in this medium as well as visit the BMA to see its growing collection of digital images. Students must have a digital camera. Prior knowledge of Photoshop is not required.  
Cross-listed with the Humanities Center

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### INTRODUCTION TO DIGITAL PHOTOGRAPHY (3) Salazar  
Students must have a digital camera with manual aperture and shutter speed. Attendance at first class is mandatory. Limit 10 per section  
In this course, students learn to use their digital cameras through a variety of projects which help them develop technical and creative skills. Students explore documentary, landscape and portrait photography. Critiques and slide lectures of historic photographs, which range from postmortem daguerreotypes to postmodern digital imagery, help students develop a personal vision. Students gain camera proficiency with one-on-one instruction in the field. Basics for print adjustment and output will be covered.  
Cross-listed with the Humanities Center

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<th>Days/Time</th>
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| 01   | T 1:30-4:20  
| 02   | W 1:30-4:20 |

### INTRODUCTION TO SCULPTURE (2) Premo  
Limit 12  Seniors only or perm. req’d  
A studio course introducing students to sculptural concepts and methods. Emphasis is on the process of creating. Even the simplest materials can effectively activate space, convey meaning and elicit emotion when used thoughtfully andimaginatively. Students will learn different methods including additive and subtractive techniques, construction, modeling and mold-making. No prerequisites except a willingness to experiment make mistakes...and clean up when you are done.

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### BLACK & WHITE PHOTOGRAPHY SEMINAR (3) Berger  
Limit 14  Prereq: 371.146 or perm req’d.

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<td>01</td>
<td>W 1:30-4:30</td>
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ART

Attendance at first class is mandatory. Students develop a project of their choice, working independently in the darkroom and meeting for weekly critiques and discussions. Using the Zone System (a method of pre-visualization developed by Ansel Adams), students will experiment with different film, paper and developer combinations specific to their projects. Frequent gallery trips and visits from guest artists are an integral part of the seminar experience.

Cross-listed with the Humanities Center

BEHAVIORAL BIOLOGY

290.420 (S) ORIGINS OF HUMAN SEXUAL ORIENTATION AND VARIATION (3) Kraft Limit 25 Juniors & Seniors only Perm. Req’d 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. Cross-listed with Psychological & Brain Sciences and Studies of Women, Gender, and Sexuality

Sec. 01 T 3-6pm

290.490 (N) SENIOR SEMINAR IN BEHAVIORAL BIOLOGY(1) Holland/Fortune Limit 10 Senior Behavioral Biology, Psychological & Brain Sciences, and Neuroscience majors only Great ideas in Behavioral Biology. Discussion of classic and cutting edge articles in the original literature. Student presentations and reaction papers. Capstone course for senior Behavioral Biology majors.

Sec. 01 TBA

020.152 (N) GENERAL BIOLOGY II (4) McCarty/Pearlman/Shingles Prereq: 020.151 Limit 320 Cross-listed with Biology

Sec. 01 MTWF 12-12:50

020.154 (N) GENERAL BIOLOGY LAB II (1) Pearlman Coreq: 020.152 Sec. 01 Coreq: 020.152 Cross-listed with Biology

Sec. 01 M 1:30-4:20

200.204 (N,S) HUMAN SEXUALITY (3) Kraft Limit 25 Registration by department permission only. Registration details available at www.psy.jhu.edu Cross-listed with Psychological & Brain Sciences and Studies of Women, Gender, and Sexuality

Sec. 01 T 12-2:30

200.206 (S) FOUNDATIONS OF MIND (4) Ferguson/Halberda Limit 20 per section Cross-listed with Psychological & Brain Sciences, Cognitive Science, and Philosophy

Sec. 01 T 10:30-11:20

200.325 (S) LAW & PSYCHOLOGY: CLINICAL APPLICATIONS (3) Raifman Limit 100 Cross-listed with Psychological & Brain Sciences and Studies of Women, Gender, and Sexuality

Sec. 01 T 3-5:30pm

200.328 (S) THEORY AND METHODS IN CLINICAL PSYCHOLOGY (3) Edwin Limit 25 Prereq 200.222 Abnormal Psych, Theories of Counseling (May be simultaneous) Senior Psychology majors only Cross-listed with Psychological & Brain Sciences

Sec. 01 M 6-8:30pm

200.343 (S) MOTIVATION (3) Petri Limit 25 Prereq 200.101 and 200.146 or Perm. Req’d Cross-listed with Psychological & Brain Sciences

Sec. 01 M 1:30-4

290.502 RESEARCH –FRESHMEN Ball/Holland/Drigotas

290.504 RESEARCH – SOPHOMORES Eggleth-Gallagher/Holland/Fortune

290.506 RESEARCH – JUNIORS Ball/Gallagher/Holland/Wang

290.508 RESEARCH – SENIORS Ball/ Holland/ Fortune

290.520 INDEPENDENT STUDY

BIOLOGY

020.102 (N) FRESHMEN SEMINAR: WE ARE WHAT WE EAT (1) Lee

Sec. 01 M 1:30-2:20
BIOLOGY

Freshmen only  Limit 25
Why do we eat? What do we eat? How do we eat? What happens to what we eat? Biochemical and nutritional aspects of foods we take will be discussed.

020.103 (N)  FRESHMEN SEMINAR: INTRODUCTION TO BIOMEDICAL RESEARCH (1.5) Roseman
Freshmen only  Limit 16

020.125 (HN) BIOLOGY IN FILM (1) Hedgecock
Limit 300  This course will feature weekly presentations of highly acclaimed, Hollywood films. Each film will be hosted by a different member of the Biology faculty who will provide an introduction and discussion of the film. Film topics include early discoveries in the biomedical arena, genetic and infectious diseases, and the potential consequences of human genetic engineering. Students will be expected to attend all classes and complete out a questionnaire based on each film.

020.152 (N) GENERAL BIOLOGY II (4) McCarthy/Pearlman/Staff
Prereq: 020.151  Limit 320
This course builds on the concepts presented and discussed in General Biology I. The primary focus of this course will be on the diversity of life and on the anatomy, physiology, and evolution of plants and animals. There will be a special emphasis on human biology. The workshops that were introduced in 020.151 General Biology I will include the use of simulation software, a critique of the primary literature, and an exploration of current trends in medicine. Cross-listed with Behavioral Biology

020.154 (N) GENERAL BIOLOGY LAB II (1) Pearlman
Coreq: 020.152  Limit 60
This course reinforces the topics covered in 020.152. Laboratory exercises explore subjects ranging from evolution to anatomy and physiology. Students participate in a project using molecular biology techniques to determine whether specific foods are made from genetically engineered plants. Cross-listed with Behavioral Biology

020.162 (N) BIOLOGY WORKSHOP II (1) Pearlman
Limit 60  Prereq: A score of 4 or 5 on the AP Biology exam
The Biology Workshop covers applications and current trends in biology through guest lectures from researchers and hands-on computer programs. Credit will be awarded for either 020.152 or 020.162, but not both.

020.306 (N) CELL BIOLOGY (4) Mendel/Staff
Prereq: 020.305  Limit 340
The molecules of living systems are organized into organelles, cells, tissues, and organisms will be explored, as well as how the activities of all of these are orchestrated and regulated to produce "life"—a phenomenon greater than the sum of its parts. Considerable emphasis is placed on experimental approaches to answering these questions. Topics covered include biological membranes, cytoskeletal elements, cell locomotion, membrane and protein traffic, the nucleus, second messengers, signal transduction, cell growth, the cell cycle, the extracellular matrix, cell contacts and adhesion, intercellular communication, epithelial structure and function, and the cell biology of early development and organ function.

020.312 (N) INTRODUCTION TO THE HUMAN BRAIN (1) Hedgecock
Limit 60
This course explores the outstanding problems of biology: how knowledge is represented in the brain. Relating insights from cognitive psychology and systems neuroscience with formal theories of learning and memory, topics include: (1) anatomical and functional relations of cerebral cortex, basal ganglia, limbic system, thalamus, cerebellum and spinal cord; (2) cortical anatomy and physiology including laminar/columnar organization, intrinsic cortical circuitry, hierarchies of cortical areas, (3) activity-dependent synaptic mechanisms; (4) functional brain imaging; (5) logicist and connectionist theories of cognition; and (6) relation of mental representations and natural language. Co-listed as 028.612
This course will reinforce the topics presented in 020.306 Cell Biology through laboratory exercises which use visible and fluorescence microscopy to study chromosomes, cell organelles, cell surface receptors, contractile proteins, and microfilaments.

020.321 (N)  
MEDICAL BIOCHEMISTRY (3)  
Wondisford  
Limit 100  
Sec. 01 TTh 9-10:15

Carbohydrates are not for energy (e.g., starch) or structure (e.g., cellulose) only. Carbohydrates conjugated to proteins and lipids (Glycoconjugates) perform diverse and intricate biological reactions. More than 2/3 of all proteins in eukaryotes are glycosylated. Glycolipids are vital elements of cell membranes, especially in the nervous tissues. Many pathogens (e.g., influenza virus) utilize glycoconjugates on human cells to invade. Structures and biological functions of glycoconjugates will be discussed in this course.

020.333 (N)  
ADAPTATIONS OF PLANTS TO THEIR ENVIRONMENT (2)  
McCarty  
Limit 60  
Prereq: 020.151-152 or AP Biology credit  
This course is an introduction to the ecological physiology of higher plants. Plants grow in the tropics and the tundra, in extremely dry or wet situations, and even in salt water. The adaptations of plants to their environments will be discussed.

020.347 (N)  
AIDS (3)  
Schroer  
Limit 60  
AIDS is the world's deadliest infectious disease. This course will cover the biology of the infectious agent that causes AIDS, human immunodeficiency virus (HIV), the effects of HIV on the immune system, the search for an HIV vaccine, and the pharmacology of the anti-viral agents that are used to suppress HIV infection. Because HIV drugs cannot cure HIV-infected individuals, we will also study the long-term consequences of HIV infection including opportunistic infections and the HIV related cancers Kaposi's sarcoma and lymphoma.

020.363 (N)  
DEVELOPMENTAL BIOLOGY (3)  
Fan Dowen/Sorvillo  
Limit 140  
Prereq: 020.305-306, 020.330  
Development of invertebrates, vertebrates and plants. The course will emphasize the experimental bases for the fundamental concepts of development.

020.402 (N)  
SEMINAR: CURRENT PROGRESS IN CELLULAR AND MOLECULAR BIOLOGY AND BIOPHYSICS (3)  
Horner  
Limit 15  
BA/MS candidates only  
This a weekly seminar designed for graduate students enrolled in the BA/MS and Ph.D. programs. The seminar involves student presentations of research and discussions on topics of current interest in the field.
BIOLOGY

020.442 MENTORING IN BIOLOGY (1) Pearlman/Shingles Limit 19
S/U only Perm. Req’d.
To become a mentor, students must have successfully completed 020.151/152, must apply using the form on the Biology Dept. Website, and must be accepted by the instructors.

Sec. 01 TBA

020.502 INTRODUCTION INDEPENDENT STUDY Horner/Cunningham Freshmen/Sophomores Only

Sec. 01 TBA

020.504 INTRODUCTION TO RESEARCH Staff

Sec. 01 TBA

020.506 INDEPENDENT STUDY Staff

Sec. 01 TBA

020.512 RESEARCH PROBLEMS Staff

Sec. 01 TBA

020.514 MENTORED RESEARCH PROGRAM IN CELLULAR & MOLECULAR BIOLOGY Staff

BA/MS candidates only

Sec. 01 TBA

020.612 INTRODUCTION TO THE HUMAN BRAIN Hedgecock Limit 20

This course explores the outstanding problem of biology: how knowledge is represented in the brain. Relating insights from cognitive psychology and systems neuroscience with formal theories of learning and memory, topics include (1) anatomical and functional relations of cerebral cortex, basal ganglia, limbic system, thalamus, cerebellum, and spinal cord; (2) cortical anatomy and physiology including lamina/columnar organization, intrinsic cortical circuit, hierarchies of cortical areas; (3) activity-dependent synaptic mechanism; (4) functional brain imaging; (5) logicist and connectist theories of cognition; and (6) relation of mental representations and natural language.

Sec. 01 TTh 1:30-2:45

020.613 BIOLOGY SCIENCE WRITING Huang Limit 12

Graduate students only

Sec. 01 T 1:30-2:20

020.629 HUMAN CANCER BIOLOGY AND TREATMENTS Huang Limit 12

Sec. 01 M 4-6pm

020.637 GENOMES AND DEVELOPMENT Van Den Hurk/Burton-Spurdling Limit 28

This course covers gametogenesis, embryogenesis, post-embryonic development, genetic analysis, developmental genetics, model developmental systems, and cell determination.

Sec. 01 TTh 9-10:15

020.638 REGULATION OF THE CELL CYCLE Hoyt Limit 12

Sec. 01 W 10-12

020.674 GRADUATE BIOPHYSICAL CHEMISTRY Woodson/Brand/ Hill/ Bowman Piercy 020.305-306 Limit 40

This course provides an overview of protein and nucleic acid structure, fundamentals of thermodynamics and kinetics, ligand binding, folding and stability of macromolecules, and the physical principles of fluorescence spectroscopy, NMR spectroscopy, and X-ray diffraction. Co-listed as 250.644

Sec. 01 M 2-3:20, TTh 10:30-11:45

020.679 ADVANCED BIOLOGICAL ELECTRON MICROSCOPY McCaffery Perm. Req’d

Lectures 6 per section. This course builds upon the basic skills and knowledge students acquired in 020.395 and 020.397. The course will emphasize the integration and use of various light and electron microscopy techniques and their application to various biomedical research related questions; with students participating in the design, implementation, and analysis of their own experiments or experiments pertaining to ongoing research in the Center. The course will be comprised of a practical "hands-on" component but will also include applied theory as students will read, analyze and discuss current journal articles.

Sec. 01 MWF 1:30-2:20

Sec. 02 T 9-11:30

Sec. 02 Th 9-11:30
BIOLOGY

020.683 THERMODYNAMICS OF BINDING AND CONFORMATIONAL EQUILIBRIUM IN PROTEINS Freire Limit 25 During the course of biological function, proteins interact with other macromolecules and with small molecules. These binding events trigger specific signals that result in the activation or inhibition of specific pathways in the cell. Molecular interactions require the ability of the interacting partners to recognize each other, for which precise three dimensional conformations are required. Understanding the way in which molecules recognize each other provides a way to understand cell function and the molecular basis for the development of new medical strategies aimed at treating disease. This course will provide an in depth coverage of the fundamental thermodynamic forces and mechanisms that control the conformational equilibrium and binding interactions of proteins.

020.739 SEMINAR: TOPICS IN BIOCHEMISTRY Bessman Limit 12 "Topics in Biochemistry" deals with minireviews taken from the Journal of Biological Chemistry. Students select a topic of their choice from the "Compendium of Minireviews" for the current year, and present it before the class for discussion. The course is open to graduate students and advanced undergraduates.

020.802 RESEARCH IN BIOLOGICAL PROBLEMS Staff Biology Graduate students only

020.825 INTRODUCTION TO BIOLOGY RESEARCH Staff Open to first year Biology graduate students only

020.826 INTRODUCTION TO BIOLOGY RESEARCH Staff Open to first year Biology graduate students only

BIOPHYSICS

250.106 (N) INTRODUCTION TO BIOMEDICAL RESEARCH & CAREERS I (1) Huang, P-C Limit 40 Freshmen and Non-Science Majors Seminar series designed for those interested in or curious about a career in biological sciences, health and medicine. A novel format combining lectures with "talk show" interviews gives students a broad view of different research problems, experimental approaches, and practical applications, as well as career paths. The emphasis is on the excitement of scientific explorations, rather than an abundance of technical facts and figures. Co-listed with 250.300 and 250.306

250.265 (N) BIOINFORMATICS (3) Fleming, P. Limit 15 Through lecture and labs, this course introduces bioinformatic concepts, algorithms and databases. Computer based exercises cover sequence comparisons, database searching, gene expression analysis and genome characterization. Emphasis is on current and emerging techniques and topics and a critical interpretation of the information obtained.

250.300 (N) INTRODUCTION TO BIOMEDICAL RESEARCH & CAREERS II (1) Huang, P-C Limit 20 Sophomore, Junior, and Senior Science Majors Co-listed with 250.106 and 250.300

250.306 (N) INTRODUCTION TO BIOMEDICAL RESEARCH & CAREERS III (1) Huang, P-C Limit 10 For Those who have already taken 250.106 or 250.300 Co-listed with 250.106 and 250.300

250.372 (N) INTRODUCTION TO BIOPHYSICAL CHEMISTRY (3) Barrick Limit 40 Prereq: Calculus, Organic Chemistry, and Introductory Physics Physical chemistry of the cell emphasizing problem solving. Topics include classical and statistical thermodynamics, conformational equilibria and binding, allosteric models, thermodynamics of proteins and nucleic acids, and helix-coil transition, and polymers.

250.382 LABORATORY IN BIOPHYSICS METHODS (3) Fleming, K. Limit 7 Instructor's permission required; preference to Biophysics majors Sec. 01 W 1:30-4:20
BIOPHYSICS

Prereq: Biochemistry 020.305
Preferred: Biochemistry Lab 020.315
Lecture and lab with hands-on introduction to the methods employed in the biophysical study of macromolecules. Topics include circular dichroism, fluorescence spectroscopy, mass spectroscopy, light scattering and transportation methods. Problem solving, data analysis and literature understanding emphasized.

250.411 (N)  
ADVANCED SEMINAR IN STRUCTURAL BIOLOGY OF CHROMATIN  O3 Brown  Limit 20  
Focus is on structural and physical aspects of nucleosomes/DNA, histone-modifying enzymes, centromeres, telomeres, DNA damage responses, and transcription. Topics are meant to illustrate how the structural and chemical aspects of proteins and nucleic acids are studied to understand contemporary biological questions. Biochemistry 020.305 and 250.372 Intro. to Biophysical Chemistry helpful.

250.520  INDEPENDENT STUDY

250.531  RESEARCH PROBLEMS

250.597  RESEARCH  Staff

250.602  BIOPHYSICS SEMINAR  Cone  
Limit 75  Graduate students only and Permission Req’d.  Students and invited speakers present current biophysics topics.

250.632  LAB RESEARCH IN BIOPHYSICS  Staff  Limit 30  Perm. Req’d.

250.644  GRADUATE BIOPHYSICAL CHEMISTRY  Woodson  Limit 40  
Prereq: 020.305-020.306, 020.668 or equivalent  Review of classical & statistical thermodynamics, protein & nucleic acid structure, ligand binding, enzyme kinetics. Biophysical methods such as fluorescence & NMR spectroscopy & X-ray crystallography will also be discussed. Co-listed as 020.674

250.674  SEMI-ANNUAL THESIS  Garcia-Moreno  Limit 10  
Dept. Majors only

250.690  METHODS: MOLECULAR BIOPHYSICS  Fleming, K.  Limit 30  
Prereq: Calculus, 250.685, and 250.689 or equivalent  Introduction to the methods employed in the study of energetics, structure and function of biological macromolecules. Topics include optical spectroscopy, transport methods, NMR, X-ray crystallography. Theoretical understanding and practical knowledge through problem solving and literature discussion emphasized.

250.802  DISSERTATION RESEARCH  Garcia-Moreno

CHEMISTRY

030.102 (N)  INTRODUCTORY CHEMISTRY II  (Q)  Staff  Limit 250 per section

NO SECTION CHANGES during semester

Continuation of 030.101 emphasizing chemical kinetics, chemical bonding. Topics: energy levels and wavefunctions for particle-in-a-box and hydrogen atom and approximate wavefunctions for molecules including introduction to hybrid orbitals.

030.106 (N)  INTRODUCTORY CHEMISTRY  (H)  Peer-taught  Prereq: 030.105 or either 030.102 (Co- or Prereq.) or 510.101 (Prereq.)  Limit 90 per section

Fundamental methods of chemistry with related calculations.

030.206 (N)  INTRODUCTORY ORGANIC CHEMISTRY II  (Q)  Staff  Limit 472

Prereq: 030.205  Continuation of 030.205

Conf:  Th 9-10:20
CHEMISTRY

030.225 (N) INTRODUCTORY ORGANIC CHEMISTRY LAB (3) Greco Prereq: 030.101-102, 030.105 Perm. Req’d for freshmen Limit 60 – Secs, 1, 2, and 4 Limit 46 – Secs, 3 and 5 Techniques include methods of purification, isolation, synthesis, and analysis. Note: Students with conflicts with their Lab Lecture must come to the Registrar’s Office to have the conflict overridden.

030.228 INTERMEDIATE ORGANIC CHEMISTRY LAB (3) Lecia Prereq: 030.225 Limit 25 Lab skills already acquired (030.225) will be further developed for synthesis, isolation, purification, and identification of organic compounds. Spectroscopic techniques, applications will be emphasized.

030.302 (N) PHYSICAL CHEMISTRY II (5) Silverstone Limit 40 Prereq: 030.301 Introduction to quantum mechanics, its application to simple problems for which classical mechanics fails. Topics: Harmonic oscillator, hydrogen atom, very approximate treatments of atoms and molecules and theoretical basis for spectroscopy.

030.306 (N) PHYSICAL CHEMISTRY INSTRUMENTATION LAB (3) Tolman Prereq: 030.305 Limit 16 per section Designed to illustrate the principles of physical chemistry, introduce the student to techniques and instruments used in modern chemical research. Chemistry majors expected to take this sequence of courses rather than 030.307.

030.441 (N) SPECTROSCOPIC METHODS OF ORGANIC STRUCTURE (3) Trover Limit 50 The course provides fundamental theoretical background for and emphasizes practical application of ultraviolet-visible and infrared spectroscopy, proton and carbon-13 nuclear magnetic resonance and mass spectrometry to the structure proof of organic compounds.

030.442 (N) ORGANOMETALLIC CHEMISTRY (3) Roth Limit 17 Co- or Prereq: 030.449 or equivalent An introduction to organometallic chemistry beginning with structure, bonding and reactivity and continuing into applications to fine chemical synthesis and catalysis.

030.449 (N) CHEMISTRY OF INORGANIC COMPOUNDS (3) Goldberg Limit 40 Coreq: 030.301-302 Physical and chemical properties of inorganic, coordination and organometallic compounds are discussed in terms of molecular orbital, ligand field and crystal field theories. Emphasis on structure and reactivity of these inorganic compounds. Other topics: magnetic properties, electronic spectra, magnetic resonance spectra, reaction kinetics.

030.501 STATISTICAL MECHANICS Poland Limit 20 Prereq: 030.301 An introduction to statistical mechanics of cooperative phenomena using lattice gases and polymers as the main models. Covered topics: phase transitions and critical phenomena, scaling laws, and the use of statistical mechanics to describe
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Limit</th>
<th>Prerequisites</th>
<th>Description</th>
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<tbody>
<tr>
<td>030.612</td>
<td>NUCLEIC ACIDS CHEMISTRY</td>
<td>Draper</td>
<td>20</td>
<td>Prereq: 030.301 or equivalent</td>
<td>A survey of physical properties of DNA and RNA. Areas explored: conformations of secondary and tertiary structures, polyelectrolyte properties, folding and unfolding reactions, and recognition by small molecules and proteins.</td>
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<td>030.614</td>
<td>CHEMICAL BIOLOGY INTERFACE</td>
<td>Greenberg</td>
<td></td>
<td></td>
<td>Limit 20  Chemistry-Biology Interface (CBI) program students and faculty will meet weekly in a forum that will host presentations from CBI faculty and students as well as invited guest speakers. These meetings will serve as a valuable opportunity for students to develop presentation skills and interact with CBI students and faculty. Enrollment is required for first and second year CBI students, and is recommended for advanced year graduate students.</td>
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<tr>
<td>030.617</td>
<td>SPECIAL TOPICS IN INORGANIC CHEMISTRY</td>
<td>Karlin</td>
<td></td>
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<td>Sec. 01 TBA</td>
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<td>030.620</td>
<td>CHEMICAL BIOLOGY II</td>
<td>Townsend</td>
<td>12</td>
<td>Prereq: Chemical Biology I or Perm. Req'd</td>
<td>Selected topics of current importance in chemical biology are covered. They include protein engineering and proteomics, cell signaling, protein-nucleic acid interactions (e.g. replication, transcription, DNA repair, catalytic RNA and the ribosome, biosynthesis of natural products, mechanisms of drug action, combinatorial chemistry and chemical genetics, and in vitro selection.</td>
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<tr>
<td>030.622</td>
<td>SEMINAR: LITERATURE OF CHEMISTRY</td>
<td>Karlin</td>
<td>25</td>
<td></td>
<td>Limit 25  Seminars are presented by advanced graduate students on topics from current chemical journals. Most first-year graduate students are expected to attend for credit. Undergraduates must take the course on a satisfactory/unsatisfactory basis.</td>
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<tr>
<td>030.626</td>
<td>ADVANCED MECHANISTIC ORGANIC CHEMISTRY</td>
<td>Greenberg</td>
<td>15</td>
<td>Prereq: 030.205-206 (Formerly 030.426)</td>
<td>Limit 18  This course covers advanced organic reactions and their mechanisms. Emphasis is given both to methods of postulating mechanisms for rationalizing reaction results and to the use of mechanistic thinking for designing reactions and reagents. This course is intended to be taken in sequence with 030.425.</td>
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<tr>
<td>030.634</td>
<td>TOPICS IN BIOORGANIC CHEMISTRY</td>
<td>Hendrickson</td>
<td></td>
<td>Prereq: Chemical Biology I for two semesters of Organic Chemistry and one semester of Biochemistry</td>
<td>Each year, topics in modern bioorganic chemistry will be treated in depth, drawing from the current literature as a primary resource. Topics will include natural products chemistry, biosynthetic reaction mechanisms, and drug design. Methods of synthesis, combinatorial synthesis, and genetics will be described throughout. Carbohydrates, lipids, polypeptides, polypeptides, terpenes, and alkaloids are some of the molecule classes to be examined. Formerly 030.632</td>
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<tr>
<td>030.667</td>
<td>ORGANIC SYNTHESIS RESEARCH SEMINAR</td>
<td>Posner</td>
<td>20</td>
<td></td>
<td>Limit 20  Open only to students in Dr. Posner's Research Group</td>
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<tr>
<td>030.678</td>
<td>ADVANCED ORGANIC SYNTHESIS</td>
<td>Lectka</td>
<td>20</td>
<td>Prereq: 030.677</td>
<td>Limit 20  An advanced discussion of organic stereochemistry &amp; its application to problems in asymmetric reactions and catalysis will be presented. Emphasis will be placed on the latest reports in the literature, especially, with respect to the development of new catalytic, asymmetric processes.</td>
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<tr>
<td>030.688</td>
<td>PHYSICAL INORGANIC METHODS</td>
<td>Meyer</td>
<td>30</td>
<td></td>
<td>Limit 30  TBA</td>
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<tr>
<td>030.690</td>
<td>A FIRST COURSE IN COMPUTATIONAL CHEMISTRY</td>
<td>Yarkony</td>
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<td>Limit 30  TBA</td>
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CLASSICS

040.106 ELEMENTARY ANCIENT GREEK
(4) Staff Limit 20 Course provides comprehensive, intensive introduction to study of ancient Greek. First semester’s focus is morphology and vocabulary; second semester’s emphasis is syntax and reading. Credit is given only upon completion of a year’s work. Course may not be taken Satisfactory/Unsatisfactory.
Sec. 01 MWF 11-11:50
Sec. 02 MWF 10-10:50

040.108 ELEMENTARY LATIN (3.5)
Staff Limit 20 per section Course provides comprehensive, intensive introduction to study of Latin for new students as well as systematic review for students with background in Latin. First semester’s emphasis is morphology and vocabulary; second semester’s focus is syntax and reading. Credit is given only upon completion of a year’s work. Course may not be taken Satisfactory/Unsatisfactory.
Sec. 01 MWF 9-9:50
Sec. 02 MWF 10-10:50

040.129 (H) DRINKING PARTIES, HOMOEROTICISM, AND GENDER POLITICS
(3) Yatromanolakis Limit 80 How is eroticism conceived of in ancient Greek societies? How was homoeroticism and homosocial desire imagined and defined in diverse sociopolitical contexts? How were gender and social and erotic intercourse represented in different cultural discourses-visual, philosophical, and literary? This course explores aspects of eroticism, ritual, philosophy, and politics in ancient Greece and other traditional cultures. Related films will be incorporated. Cross-listed with Anthropology, German and Romance Languages, History, Political Science, and Studies of Women, Gender, and Sexuality.
Sec. 01 TTh 1:30-2:45

040.206 (H) INTERMEDIATE ANCIENT GREEK
(3) Sullivan Limit 35 Prereq: 040.105-106 or equivalent An introduction to Attic prose. Facility in reading and translating Ancient Greek is developed through close engagement with a single Classical text. This semester’s focus is on Plato’s Phaedo.
Sec. 01 MWF 10-10:50

040.208 (H) INTERMEDIATE LATIN (3) Staff Limit 20 Prereq: 040.107-108 or equivalent Reading ability in Latin is developed through the study of various authors, primarily Cicero (fall) and Vergil (spring). Specific offerings vary. (Same as 040.707)
Sec. 01 MWF 10-10:50

040.306 (H) ADVANCED ANCIENT GREEK (3)
Yatromanolakis Limit 20 Reading of prose or verse authors, depending on the needs of students. (Same as 040.706)
Sec. 01 T 5-7:30pm

040.307 (H) ADVANCED LATIN/LATIN PROSE
(3) Staff Limit 20 Prereq: 040.207-208 or equivalent. This course aims to increase proficiency and improve comprehension of Latin language. Intensive reading of Latin texts, with attention to grammar, idiom, translation, etc. Specific offerings vary. (Same as 040.707)
Sec. 01 TBA
040.351 (H) **POMPEII: LIFE AND ART IN A ROMAN CITY (3)** Valladares  Limit 12  Prereq: Background in classics and/or art history. This course will introduce students to scholarship on the city of Pompeii. We will study key houses and monuments, approaching them from an interdisciplinary lens.

040.502 **INDEPENDENT STUDY** Staff

040.520 **HONORS RESEARCH** Staff

040.580 **MASTER’S RESEARCH** Staff

040.617 **ROMAN PAINTING: A SURVEY** Valladares  Limit 12  The course will offer a survey of established approaches to Roman painting and challenge students to develop their own methodological lens for analyzing this material.

040.621 **PROSEMINAR TO CLASSICAL ARCHAEOLOGY** Shapiro  Limit 15  Graduate level introduction to methods of research in the material culture of Greece and Rome. Cross-listed with History of Art

040.625  **“AUGUSTAN” POETRY BETWEEN THE WARS (42-30 BCE)** Sullivan  Limit 15  A thematic examination of Virgil’s Eclogues, Propertius’ Epistles, and Horace’s Satires and Epodes, comparing and contrasting their responses to the upheavals of Rome’s recent civil wars.

040.706 **READING ANCIENT GREEK** Yatromanolakis  Limit 20  This reading seminar is intended to train graduate students in direct and critical work on primary sources. (Same as 040.306)

040.707 **READING LATIN PROSE** Staff  Limit 15  This reading seminar is intended to train graduate students in direct and critical work on primary sources. (Same as 040.307)

040.802 **INDEPENDENT STUDY** Staff

040.815 **DISSERTATION RESEARCH** Staff

**COGNITIVE SCIENCE**

050.101 (N,S) **COGNITION (3)** Frank  Limit 135  Introductory course exploring the study of human mental processes within the field of cognitive science. Drawing upon cognitive psychology, cognitive neuropsychology, cognitive neuroscience, linguistics, and artificial intelligence, this course examines theory, methods, and major findings in work on vision, reasoning, and language.

050.203 (N,S) **COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN (3)** Whitney  Limit 150  Freshmen by permission

050.240 (N,S) **THE WORLD OF LANGUAGE (3)** Legendre  Limit 25 per section  This hands-on course exposes students to the fascinating variety—and uniformity—to be found among the world’s 6,000 languages through group lectures on a variety of topics as well as actual linguistic fieldwork conducted in small groups with a native speaker of a language unknown to the participants.

050.315 (N,S) **COGNITIVE NEUROPSYCHOLOGY OF VISUAL PERCEPTION (3)** McGraw  Limit 20  Prereq: 050.101 or 050.105  When the visual areas of the brain are damaged or fail to develop normally, remarkable perceptual deficits may result (for example, inability to determine where objects are even though the objects can be seen clearly). This course explores a variety of visual deficits, focusing on what the deficits can tell us about normal visual perception. Topics include object recognition and visual agnosia, spatial perception and spatial deficits, and attention and visual neglect. Cross-listed with Neuroscience

050.325 (N,S) **PHONOLOGY I (3)** Wilson  Sec. 01  TTh 12-1:15
COGNITIVE SCIENCE

Limit 30 Prereq: Previous experience with one other language-related course is desirable but not obligatory
An introduction to the basic principles underlying the mental representation and manipulation of language sounds and their relation to human perception and vocal articulation: how units of sound are both decomposable into elementary features, and combined to form larger structures like syllables and words. The role of rules and constraints in a formal theory of phonological competence and in accounting for the range of variation among the world’s languages. Same course as 050.625

050.326 (N,S) (W)
FOUNDATIONS OF COGNITIVE SCIENCE (3) Smolensky
Limit 30 Prereq: one 300 level course from Computer Science, Linguistics, Philosophy or Psychology
Same course as 050.625
Cross-listed with Neuroscience

Sec. 01 MF 3-4:15

050.332 (N,S)
DEVELOPMENTAL COGNITIVE NEUROSCIENCE (3) Landau
Limit 20 Prereq: 200.103, 050.101, 050.105, 050.245 Perm. Req’d
Same course as 050.632
Cross-listed with Neuroscience

Sec. 01 MW 1:30-2:45

050.333 (N,S)
PSYCHOLINGUISTICS (3) Badecker
Limit 50 This course provides a broad survey of current research on natural language processing. Topics include the recognition and production of words, the planning and production of sentences, and how listeners understand spoken sentences. The types of evidence examined include speech errors, the analysis of acquired language impairments, eye-tracking and Event-Related Potential (ERP) measurements, and various measures of lexical access and relative processing complexity that can be exploited to reveal how the brain represents and processes language. Same course as 050.613

Sec. 01 T 1:30-3:45

200.206 (S)
FOUNDATIONS OF MIND (4)
Feigenson/Halberda
Limit 20 per section
Cross-listed with Behavioral Biology, Psychological & Brain Sciences, and Philosophy

Lec. Sec. 01 MWF 1:30-2:20
02 T 10:30-11:20
03 T 4:30-5:20

050.502
READINGS IN COGNITIVE SCIENCE FOR FRESHMEN

050.504
RESEARCH IN COGNITIVE SCIENCE FOR FRESHMEN

050.506
READINGS IN COGNITIVE SCIENCE FOR SOPHOMORES

050.508
RESEARCH IN COGNITIVE SCIENCE FOR SOPHOMORES

050.510
COGNITIVE SCIENCE UNDERGRADUATE INTERNSHIP

050.512
READINGS IN COGNITIVE SCIENCE FOR JUNIORS

050.514
RESEARCH IN COGNITIVE SCIENCE FOR JUNIORS

050.516
READINGS IN COGNITIVE SCIENCE FOR SENIORS

050.518
RESEARCH IN COGNITIVE SCIENCE FOR SENIORS

050.625
PHONOLOGY I Wilson
Limit 30 Prereq: Previous experience with one other language-related course is desirable but not obligatory
An introduction to the basic principles underlying the mental representation and manipulation of language sounds and their relation to human perception and vocal articulation: how units of sound are both decomposable into elementary features, and combined to form larger structures like syllables and words. The role of rules and constraints in a formal theory of phonological competence and in accounting for the range of variation among the world’s languages. Same course as 050.325

Sec. 01 TTh 12-1:15

050.626 (W)
FOUNDATIONS OF COGNITIVE SCIENCE Smolensky
Limit 30 Prereq: one 300 level course from Computer Science, Linguistics, Philosophy or Psychology
Same course as 050.625

Sec. 01 MF 3-4:15

050.632
DEVELOPMENTAL COGNITIVE NEUROSCIENCE Landau
Limit 20 Prereq: 200.103, 050.101, 050.105, 050.245 Perm. Req’d
Same course as 050.332
Cross-listed with Neuroscience

Sec. 01 MW 1:30-2:45
COGNITIVE SCIENCE

050.633 PSYCHOLINGUISTICS Badecker
Limit 50 This course provides a broad survey of current research on natural language processing. Topics include the recognition and production of words, the planning and production of sentences, and how listeners understand spoken sentences. The types of evidence examined include speech errors, the analysis of acquired language impairments, eye-tracking and Event-Related Potential (ERP) measurements, and various measures of lexical access and relative processing complexity that can be exploited to reveal how the brain represents and processes language. Same course as 050.333
Sec. 01 T 1:30-3:45

050.800 DIRECTED READINGS Staff Perm. Req’d Guided independent readings in special fields of cognitive science.
Sec. 01 TBA

050.802 RESEARCH SEMINAR IN COGNITIVE PROCESSES McCluskey Perm. Req’d
Sec. 01 TBA

050.811 RESEARCH SEMINAR: LANGUAGE & COGNITION Landau Perm. Req’d A specialized research seminar for individual researching language acquisition, cognitive development and the interface between language and cognition. Students must actively carry out empirical or theoretical research in these areas.
Sec. 01 TBA

050.822 RESEARCH SEMINAR IN SYNTAX Legendre Perm. Req’d Limit 20
Sec. 01 TBA

050.826 RESEARCH SEMINAR IN FORMAL APPROACHES TO COGNITIVE SCIENCE Frank/Smolensky Perm. Req’d Limit 20
Sec. 01 TBA

050.832 RESEARCH IN LANGUAGE PROCESSES Badecker Perm. Req’d Limit 20
Sec. 01 TBA

050.839 RESEARCH - COGNITIVE SCIENCE Staff Perm. Req’d Limit 20
Sec. 01 TBA

050.849 TEACHING PRACTICUM Staff Perm. Req’d Limit 20 Required course for Teaching Assistants.
Sec. 01 TBA

050.850 DEPARTMENTAL READING COURSE SEMINAR Staff Perm. Req’d Limit 20
Sec. 01 TBA

050.860 PROFESSIONAL SEMINAR IN COGNITIVE SCIENCE Smolensky/Landau Limit 20
Sec. 01 F 1:30-2:45

DEAN’S TEACHING FELLOWSHIP COURSES

ENGLISH

060.350 (H) BLACK, WHITE AND READ ALL OVER: THE AMERICAN SLAVE NARRATIVE RECONSIDERED (1830s-1850s) Bynum Limit 18
This course seeks to reconsider the American slave narrative by addressing the social and political concerns of African American authors alongside those of the American Renaissance rather than separately. Those larger social concerns will include: race, gender, manhood and womanhood and American identity.
Sec. 01 TTh 10:30-11:45

GERMAN AND ROMANCE LANGUAGES AND LITERATURES

212.330 (H) LE ROMAN NOIR FRANCOPHONE Giraud Limit 15
Sec. 01 M 2-4:30

HISTORY

100.215 (H) RUSSIA AND THE SOVIET UNION AS
DEAN’S TEACHING FELLOWSHIP COURSES

EMPIRE (3) Babiracki  Limit 15  This seminar based course will familiarize students with the political, social, and cultural mechanisms of Russian and Soviet imperial rule in the 19th and 20th centuries.

100.218 (H,S)  Sec. 01  TTh 1:30-2:45
THIS ALMOST CHOSEN PEOPLE: POPULAR RELIGION IN U.S. HISTORY (3) Matsui  Limit 25  What role has religion played in American history? This course investigates the influence of popular religious beliefs on politics, race, and gender in the United States from the 17th through the 20th century.

HISTORY OF ART

ARTISTS AND WARFARE IN THE RENAISSANCE: A MEETING OF ART AND SCIENCE (3) Gregg  Limit 25  Covers fortifications, military maps, artists as soldiers and spies, and battle images. Themes will include the debate between art and science, and what art can reveal about war in society.

010.220 (H)  Sec. 01  F 12-3
010.342 (H)  Sec. 01  MF 10:30-11:45

PROGRAM IN LATIN AMERICAN STUDIES

TRUTH, JUSTICE, AND RECONCILIATION IN LATIN AMERICA (3) Rojas-Perez  This course uses the cases of Peru, Chile, and Guatemala to examine critically the origins, experience, and impact of truth commissions for achieving reconciliation and peace in Latin American post-war settings.

NEAR EASTERN STUDIES

READING EGYPTIAN TEMPLES: STONEWALL AS MYTHOLOGY, THEOLOGY AND IDEOLOGY (3) Zomait  Limit 25  Using the ancient Egyptian temples, this class will question how we construct the Egyptian religion and the history of the Egyptian state.

PHILOSOPHY

EPISTEMOLOGY OF RELIGIOUS BELIEF (3) McGill  Limit 15  Is it rational to believe that God exists? What can we know about God? We will analyze both traditional arguments for God’s existence and contemporary arguments about the rationality of theistic belief.

150.478 (H)  Sec. 01  TTh 1:30-2:45
PHILOSOPHY OF RELIGION FROM KANT TO NIETZSCHE (3) Leland  Limit 15  Is belief in god rationally justified? What is the relation between faith and reason? Is religion “the opium of the people,” as Marx claimed? What did Nietzsche mean when he wrote, “God is dead”? This course examines influential ideas about religion and religious belief from Kant, Schleiermacher, Hegel, Feuerbach, Marx, Kierkegaard, and Nietzsche.

150.479 (H)  Sec. 01  MW 4:30-5:45pm

POLITICAL SCIENCE

HERMENEUTICS AND POLITICS (3) Sat  Limit 25  Theories of interpretation particularly with reference to Christian biblical hermeneutics and fundamentalist literalism. Readings from St. Augustine, Luther, Schleiermacher, Dilthey, Heidegger, Gadamer, Habermas, et al.

191.328 (H,S)  Sec. 01  W 3-5:30pm
INTERNATIONAL CONFLICT RESOLUTION (3) Pugh  Limit 25  Course is intended for Juniors, Seniors and graduate students. An introduction to the theory and practice of international conflict resolution, which will examine how issues of power and identity affect conflict and peacemaking in the international system.

191.411 (S)  Sec. 01  T 3-5:30pm
### DEAN’S TEACHING FELLOWSHIP COURSES

**PUBLIC HEALTH STUDIES**

- **280.305 (S) CORPORATIONS AND THE PUBLIC’S HEALTH (3)** Rutkow  
  **Limit 20** This course examines the impact, both positive and negative, that corporations can have on public health domestically and internationally. The role of regulation, social movements, and globalization will be considered.

- **280.305 (W)**  
  **Sec. 01 MW 1:30-2:45**

### EARTH AND PLANETARY SCIENCES

- **270.108 (N) FLUID EARTH (3)** Haine  
  **Limit 20** This course is a broad survey of the Earth’s oceans also touching on the atmosphere and climate. Topics include: waves, tides, tsunamis, ocean and atmosphere circulation, fisheries, and El Niño.

- **Sec. 01 MWF 12-12:50**

- **270.111 (N) FRESHMAN SEMINAR: SEA LEVEL RISE (1)** Conrad  
  **Limit 20** Discussion of the evidence for, and causes of, sea level change through time. We will examine both historical (10-100 years) and geological (thousands to millions of years) changes in sea level, as well as predicted future trends and their potential impact on society. Discussion-oriented interactive format intended for freshmen interested in environmental issues.

- **Sec. 01 W 1-1:50**

- **270.113 (N) FRESHMAN SEMINAR: ENVIRONMENTAL POISONS (1)** Stvirjenski  
  **Limit 12** An exploration of the occurrence and potential effects of poisons in the environment, from naturally occurring ones such as arsenic to those that may be introduced by mankind such as nuclear waste.

- **Sec. 01 T 1:30-2:20**

- **270.114 (N) GUIDED TOUR: THE PLANETS (3)** Marsh  
  **Limit 110** An introduction to planetary science and planetary exploration primarily for non-science majors. A survey of concepts from astronomy, chemistry, geology, and physics applied to the study of the solar system.

- **Sec. 01 TTh 1:30-2:45**

- **270.303 (N) GEODYNAMICS (3)** Conrad  
  **Prereq: 171.101 or 171.105, 110.202** Study of the basic principles that control deformation of Earth’s crust and mantle. Elastic, viscoelastic, and viscous deformation are described using examples from tectonics, uplift, mantle convection, faulting, etc.

- **Sec. 01 MWF 11-11:50**

- **270.308 (N) POPULATION AND COMMUNITY ECOLGY (3)** Szlavecz  
  This course explores the distribution and abundance of organisms and their interactions. Topics include dynamics and regulation of populations, population interactions (competition, predation, mutualism, parasitism, herbivory), biodiversity, organization of equilibrium and non-equilibrium communities, energy flow and nutrient cycles in ecosystems. Field trip included.

- **Sec. 01 TTh 1:30-2:45**

- **270.315 (N) NATURAL CATASTROPHES (3)** Olson  
  **Limit 20** A survey of naturally occurring catastrophic phenomena, with emphasis on the underlying physical processes. Topics include hurricanes, tornadoes, lightning, earthquakes, tsunamis, landslides, and volcanic eruptions and climate change. Intended for students in science and engineering.

- **Sec. 01 MWF 10-10:50**

- **270.360 (N) CLIMATE CHANGE: SCIENCE & POLICY (3)** Waugh  
  **Prereq: 171.101 or 171.105, 110.202** This course will investigate the policy and scientific debate over global warming. It will review the current state of scientific knowledge about climate change, examine the potential impacts and implications of climate change, explore our options for responding to climate change, and discuss the present political debate over global warming. Cross-listed with Public Health Studies.

- **Sec. 01 TTh 3:4-4:15**

- **270.401 (N) INTRODUCTION TO PHYSICAL OCEANOGRAPHY (3)** Osborn/Haine  
  This course is designed for first-year graduate students in oceanography, graduate students in engineering disciplines that will involve ocean processes (Civil, Environmental and Mechanical Engineering departments), and advanced undergraduates who want to understand the application of their knowledge of physics and mathematics to the ocean. This first semester of the sequence is an introduction to a wide range of oceanic phenomena. Prerequisites: Students are to be knowledgeable about partial differential equations.

- **Sec. 01 WF 3-4:45**

- **270.496 (W) SENIOR THESIS (4)** Staff  
  **Limit 10** Preparation of a substantial thesis based upon independent student research, supervised by at least one faculty member in Earth and Planetary Sciences. Open to Senior

- **Sec. 01 TBA**
EARTH AND PLANETARY SCIENCES

departmental majors only. Required for department honors.

270.502
INDEPENDENT STUDY Staff

270.504
INDEPENDENT RESEARCH (1-3) Staff
Research under the direction of members of the Earth and Planetary Sciences faculty. Prerequisites: Permission of instructor.

270.508
INTERNSHIP Staff

270.604
SEMINAR: GEOPHYSICAL PETROLOGY Marshall Limit 15
Discussion of present research topics in geophysics and igneous petrology. With consent of instructor.

270.606
JOURNAL CLUB Conrad Limit 50
Review and discussion of new geologic literature and current research. All geology students participate and deliver at least one paper a year.

270.624
SEMINAR IN STABLE ISOTOPE TECHNIQUES Joelson Limit 10
This laboratory course will compare the new automated preparation systems attached to the isoprime mass spectrometer with more traditional off-line vacuum apparatus, on the basis of ease/rapidity of analysis, sensitivity, precision and flexibility. We will focus on the stable isotopes of C in organic matter (modern and fossil) and D/H and O in water.

270.638
MINEROLOGY AND CRYSTALLOGRAPHY SEMINAR Veblen Lectures and discussion on crystallographic problems in mineralogy.

270.642

500.602
SEMINAR: ENVIRONMENTAL AND APPLIED FLUID MECHANICS Meneveau Cross-listed with General Engineering, DOGEE, and Mechanical Engineering

ECONOMICS

180.102 (S)
ELEMENTS OF MICROECONOMICS Hamilton Limit 18 per section
Prereq: Basic facility with graphs and algebra. An introduction to the economic system and economic analysis with emphasis on demand and supply, relative prices, the allocation of resources, and the distribution of goods and services; theory of consumer behavior, theory of the firm, and competition and monopoly, including the application of microeconomic analysis to contemporary problems.

180.215 (S)
GAME THEORY-SOCIAL SCIENCE Harrington Limit 75 Prereq 180.102

180.231 (S)
COMPARATIVE ECONOMIC SYSTEMS Morgan Limit 40 Prereq 180.101-102

180.242 (S)
INTERNATIONAL MONETARY ECONOMICS Martin Limit 125 Prereq 180.101-102. Balance of payments concepts and the trade balance, exchange rates and the foreign exchange market, expectations, interest rates and capital flows, central banking and monetary policy in open economies, exchange rate regimes and macroeconomic policy. Formerly 180.342

180.280 (S)
POPULATION ECONOMICS Boggess Limit 80 Prereq 180.101-102

180.302 (S)
MACROECONOMIC THEORY (4.5) Ball Limit 40 per section
Prereq: 180.101-102 (Can be taken concurrently with 180.101-102) and Differential Calculus 110.106, or permission from instructor. This course provides a treatment of macroeconomic theory including a static analysis of the determination of output, employment, the price level, the rate of interest, and a
ECONOMICS

dynamic analysis of growth, inflation, and business cycles. In addition, the use and effectiveness of monetary and fiscal policy to bring about full employment, price stability, and steady economic growth will be discussed.

180.334 (Q,S) ECONOMETRICS (3) Woutersen
Limit 50 per section
Prereq. or Coreq. 180.301-302, 550.111-112 or Pers Req'd. Introduction to the methods of estimation in economic research. The first part of the course develops the primary method employed in economic research, the method of least squares. This is followed by an investigation of the performance of the methods in a variety of important situations. The development of a way to handle many of the situations in which ordinary least squares is not useful, the method of instrumental variables, concludes the course.

180.336 (S) ECONOMIC FORECASTING (3) Barbera
Limit 25
Prereq. 180.101-102, 180.302 or Perm. Req'd. Will sketch out a strategy for anticipating economic turning points. Business cycle basics, monetary policy/financial markets/real economy interactions will be reviewed. Long-term growth issues will be explored.

180.351 (S) LABOR ECONOMICS (3) Barnow
Limit 25
Prereq. 180.301 or permission of instructor

180.367 (S) INVESTMENTS AND PORTFOLIO MANAGEMENT (3) Pritsker
Limit 25 per section

180.368 (S) MANAGERIAL ECONOMICS AND BUSINESS STRATEGY (3) Kohli
Limit 25
Prereq. 180.301, 550.111, and either 180.367 or 551.302 or Perm. Req'd. Seminar on quantitative concepts, decision-making, and strategy in business organizations. Overall context is "value" – how it is measured and maximized long term. Microeconomic theory of the firm, competitive analysis, corporate finance.

180.369 (S) RESEARCH IN ECONOMICS OF FINANCIAL MARKETS 3 Fohlin
Limit 20
Prereq. 180.301 Recommended 180.334, 180.367

180.390 (S) HEALTH ECONOMICS AND DEVELOPING COUNTRIES (3) Gershoni
Limit 20

180.502 INDEPENDENT STUDY

180.522 SENIOR HONORS THESIS IN ECONOMICS (5) Fohlin
Prereq. 180.521 Research in Economics/Perm. Req'd. Formerly 180.392 (This course cannot be counted as one of the 5 elective economics courses required for the Economics Major.) Students enrolled in this course will complete the Senior Honors Thesis under the supervision of a thesis advisor (who will have been chosen by the student prior to registration for 180.521). The formal course instructor will be in charge of overseeing registration and submitting grades. He/she will also be available for discussions of progress or problems on the thesis. Please note that your thesis advisor can be any faculty member in the Department of Economics, and need not be the same person as the course instructor.

360.528 APPLIED ECONOMICS RESEARCH (3) Hanke
Prereq. 180.101-102
Permission required Satisfactory/Unsatisfactory only Cross-listed with Interdepartmental and Geography and Environmental Engineering

180.602 MICROECONOMIC THEORY Khan
Limit 25
Prereq. 180.301-302 or equivalent and Differential Calculus 110.106 or perm. Req'd. First term: a systematic presentation of microeconomic theory both its partial equilibrium and general equilibrium aspects. Topics covered
ECONOMICS
will include preferences and utility, exchange, production, theory of the firm, capital and interest, competition and monopoly, stability of equilibrium, and welfare economics. Second term: a more intensive discussion of selected topics, emphasizing recent contributions.

180.604 MACROECONOMIC THEORY Carroll
Limit 25 Prereq: 180.301-302 or Perm. Req’d. First term: a comprehensive treatment of macroeconomic theory, including static analysis of aggregate output and employment, the rate of interest, and the price level; aggregate theory of investment, consumption, demand and supply of money; empirical work on aggregate relationships. Second term: the microdynamic theory of growth, cycles, unemployment and inflation, and selected subjects.

180.606 ADVANCED MACROECONOMICS II
Ball Limit 25 Prereq: 180.604 Sec. 01 MT 11-12:50

180.608 MACROECONOMETRICS II Faust
Limit 25 Prereq: 180.603-604 Sec. 01 W 9-10:50

180.616 MATH METHODS IN ECONOMICS II
Khan Carroll Limit 20 Prereq: 180.615 or permission of instructor. Dates/Times/Instructors: Khan 03/28–04/10 (Th 3-4:50) Carroll 03/24–03/30, 04/17–05/15 (MT 1-1:50) See description for times

180.618 GAME THEORY Chan Limit 20 Prereq: 180.601 This course is an introduction to cooperative and non-cooperative games. Its focus is non-cooperative game theory with applications in economics. Topics include foundations of solution concepts, refinements of Nash equilibrium, repeated games, games with incomplete information, differential games, and experimental testing of hypotheses.

180.624 TOPICS ECONOMIC THEORY Chan
Limit 20 Prereq: 180.601-602 Sec. 01 M 10-11:50

180.633 ECONOMETRICS Hu Limit 20 Prereq: 180.301-302, Statistical Inference, and Differential Calculus (incl. Partial Derivative and Matrix Algebra) or consent of instructor. Mathematical models of economic behavior and the use of statistical methods for testing economic theories and estimating economic parameters. Subject matter will vary from year to year; statistical methods, such as linear regression, multivariate analysis, and identification, estimation and testing in simultaneous equation models, will be stressed.

180.638 MICROLECONOMETRICS II Hu
Limit 20 Prereq: 180.601-602 This course introduces techniques that are used in applied research in microeconomics. Focus is on a particular class of models, namely discrete choice models. Well-known models in this class are the logit and probit models. Models that have better properties involve high-dimensional integrals, and this leads us to a discussion of simulation estimation. Finally, dynamic decision models for forward-looking agents who face irreversible decisions are introduced. As an application some models in economic demography are considered.

180.642 INTERNATIONAL MONETARY ECONOMICS Gruber
Limit 20 Prereq: 180.601 and 180.603 Sec. 01 Th 5-6:50pm

180.654 EMPIRICAL METHODS IN RISK & UNCERTAINTY Shore
Limit 20 Prereq: 180.101-102, 180.334 This doctoral course will provide tools and methods to test the models and measure the parameters of interest in the microeconomics of decision-making under uncertainty.

180.672 INDUSTRIAL ORGANIZATION II Shu
Limit 20 Prereq 180.601 Sec. 01 M 10-11:50

180.694 APPLIED MICRO WORKSHOP Shore Limit 20 Sec. 01 W 3:30-4:50

180.695 MACROECONOMICS THEORY WORKSHOP Staff
Limit 20 Sec. 01 M 3:30-4:50

180.696 MACROECONOMICS WORKSHOP Sec. 01 T 3:30-4:50
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<tr>
<th>Course Code</th>
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<th>Instructor</th>
<th>Sections</th>
<th>Days</th>
<th>Time</th>
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<tr>
<td>060.101 (H)</td>
<td>THE STUDY OF LITERATURE: BRITISH LITERATURE I: MIDDLE AGES TO 18TH CENTURY (3)</td>
<td>Kain/Evans</td>
<td>Sec. 01</td>
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<tr>
<td>060.107 (H)</td>
<td>INTRODUCTION TO LITERARY STUDY (3)</td>
<td>Daniel</td>
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<td>060.114 (H)</td>
<td>EXPOSITORY WRITING (3)</td>
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<td>060.215 (I)</td>
<td>ADVANCED EXPOSITORY WRITING (3)</td>
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<tr>
<td>060.308 (H)</td>
<td>THE APOCALYPSE IN AMERICAN LITERATURE (3)</td>
<td>Noble</td>
<td>Sec. 01</td>
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<tr>
<td>060.309 (H)</td>
<td>SERIAL FICTION AND VICTORIAN CULTURE (3)</td>
<td>Jarvis</td>
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<td>060.316 (H)</td>
<td>MILTON IN DEBATE (3)</td>
<td>Daniel</td>
<td>Sec. 01</td>
<td>W</td>
<td>3-5:30pm</td>
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</table>
ENGLISH

of its political, theological and marital arguments. After a brief examination of the rhetoric of conversation in his tract The Doctrine and Discipline of Divorce (1643), a series of conversations and debates between The Lady and Comus, Adam and Eve, Christ and Satan, and Samson and Delilah will be read as embodiments of the dialectic conflict between Milton’s poetics of temptation and his politics of radical commitment.

SURVEY OF MIDDLE ENGLISH LITERATURE (3) Stinson Limit 18

This course is designed to provide a broad introduction to medieval English literature, covering a range of texts from some of the earliest extant English poems to the later medieval period, and exploring numerous types of literature typical of the Middle Ages, including heroic poetry, courtly romance, allegorical dream vision, personal devotion, drama, didactic poetry, and alliterative and lyric verse.

THE SATIRICAL BODY, 1660-1740 (3) Mikesworth Limit 18

Prereq: Must have taken one English class. This course examines the flourishing of English satirical literature during the late Stuart and early Hanover period, paying special attention to the discursive formation of the human body (in its sensory, sexual, and excremental capacities). Authors studied will include Dryden, Bohn, Pope, Swift, and Fielding. Cross-listed with Studies of Women, Gender and Sexuality.

CERTITUDE, FASCINATION, AND THE STRANGE IN EARLY AMERICAN LITERATURE, 1624-1799 (3) Hoppe Limit 18

Prereq: At least one English department course other than Expository Writing. Texts include travelogues, captivity narratives, memoirs, sermons, scientific treatises, verse; a novel; topics include the relationship of the sensuous to the didactic, scientific curiosity to sociability, and ethnography to social order.

RENAISSANCE KEYWORDS (3) Parris Limit 18 Prereq: At least one English department course. This seminar will work through a set of popular Renaissance texts (drama, poetry, prose, epic, and philosophy) as well as relevant theoretical/critical writings, in an attempt to map out an inquiry of "keywords" for the period we loosely call the English Renaissance (ca. 1576-1689). Authors include Shakespeare, Spenser, Nashe, Cavendish, Mary Sidney, Foucault, Deleuze and Guattari.

BLACK, WHITE AND READ ALL OVER: THE AMERICAN SLAVE NARRATIVE RECONSIDERED (1830s-1850s) (3) Bynum Limit 18

Prereq: One English department course exclusive of Expository Writing. This course seeks to reconsider the American slave narrative by addressing the social and political concerns of African American authors alongside those of the American Renaissance rather than separately. Those larger social concerns will include: race, gender, manhood and womanhood and American identity.

HENRY JAMES (3) Cameron Limit 18 Prereq: One English department course. This course will examine the dynamic interplay between the key terms “race,” “affect,” and “ambiguity” in American fiction, from the American Renaissance to the 1980s. Writers will include Melville, Stein, Larsen, Faulkner, Ellison, Baldwin, and others.

IMAGINING MEDIEVAL ITALIAN CULTURE: THE NAME OF THE ROSE (3) Stephens Limit 20 Cross-listed with Film & Media Studies, History, Studies of Women, Gender, and Sexuality, the Humanities Center.
## ENGLISH

**German and Romance Languages**

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<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
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<td>060.619</td>
<td>SPENSER AND ETHICS</td>
<td>Halpern</td>
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<td>060.670 (W)</td>
<td>HENRY JAMES</td>
<td>Cameron</td>
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<td>Limit 9</td>
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<td>060.681 (W)</td>
<td>LITERARY THEORY</td>
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<td>213.646</td>
<td>FANTASY NARRATIVES OF THE 19TH CENTURY</td>
<td>Caplan</td>
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<td>Limit 15</td>
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<td>214.748</td>
<td>VICO AND THE OLD SCIENCE</td>
<td>Stephens</td>
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<td>Limit 15</td>
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<td>060.800</td>
<td>INDEPENDENT STUDY</td>
<td>Staff</td>
<td></td>
<td>Independent Study</td>
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## FILM AND MEDIA STUDIES

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Type</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
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<tbody>
<tr>
<td>061.145 (H)</td>
<td>INTRODUCTION TO VISUAL LANGUAGE (3)</td>
<td>Staff</td>
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<td>Independent Study</td>
<td>MW 3-4:15</td>
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<tr>
<td>061.150 (H)</td>
<td>INTRODUCTION TO FILM PRODUCTION (3)</td>
<td>Porterfield</td>
<td></td>
<td>Permission required</td>
<td>F 12:00-2:30</td>
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<tr>
<td>061.245 (H)</td>
<td>INTRODUCTION TO FILM THEORY (3)</td>
<td>Roos</td>
<td></td>
<td>Permission required</td>
<td>T 1:30-3:20</td>
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<tr>
<td>061.301 (H)</td>
<td>ADVANCED FILM PRODUCTION (3)</td>
<td>Mann</td>
<td></td>
<td>Permission required</td>
<td>T 3-5:30</td>
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<tr>
<td>061.313 (H)</td>
<td>STORY AND CHARACTER DESIGN FOR THE SCREENPLAY (3)</td>
<td>Bucknell</td>
<td></td>
<td>Permission required</td>
<td>Th 1:30-4</td>
<td></td>
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<tr>
<td>061.323 (H)</td>
<td>MASCULINITIES (3)</td>
<td>Bucknell</td>
<td></td>
<td>Permission required</td>
<td>T 12-2:20</td>
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<tr>
<td>061.324 (H)</td>
<td>THE DECADENT BLACK &amp; WHITE (3)</td>
<td>Roper</td>
<td></td>
<td>Permission required</td>
<td>W 1:30-4:20</td>
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</table>
FILM AND MEDIA STUDIES

061.345 (H) PRIMITIVE FILM (3) Mann Lab Sec. 01 W 1:30-4
Prereq: Intro to Film Production (061.150)
Primative Film explores pre-cinematic and early cinematic devices and spectatorship. The course offers readings as well as production techniques. Students construct and film a zoetrope.

061.347 (H) WRITING WITH LIGHT (3) Staff Lab Fee: $100 Perm. Req'd Sec. 01 Th 3-5:30pm
Prereq: Intro to Film Production (061.150) Writing with Light explores the stylistic applications of lighting for film. The course will include readings and class projects emphasizing various lighting modes.

061.348 (H) NARRATIVE PRODUCTION (3) Staff Lab Fee: $100 Limit 9 Sec. 01 M 4-7pm
Most meetings will take place at MICA
Prereq: Intro. to Film Production (061.150, formerly 061.240) or Intro. to Visual Language (061.145) Students from MICA and JHU will collaborate to produce short narrative films from their original screenplays. Production accompanied workshops with filmmakers on Production Design, Directing, Cinematography, and Art Direction.

061.366 (H) THE NEW HOLLYWOOD: AMERICAN CINEMA OF THE SEVENTIES (3) DeLibero Lab Fee: $40 Limit 15 Sec. 01 W 4:30-7pm
Films of Altman, Peckinpah, Coppola, Penn, Scorsese, and others. Intensive examination of the films and their cultural/political context. Cross-listed with Studies of Women, Gender, and Sexuality

GERMAN AND ROMANCE LANGUAGES AND LITERATURES

FRENCH

Placement in all language courses is determined by previous course work at Hopkins or by a Placement Examination. Please contact Claude Guillemard – claude@jhu.edu

210.102 FRENCH ELEMENTS II (4.5) Sec. 01 MWF 9-9:50, T 10:30-11:20
#enroll Limit 15 per section
GERMAN AND ROMANCE LANGUAGES AND LITERATURES

Prereq: 210.101 or 210.103 or Webcape score below 320. May not be taken Satisfactory / Unsatisfactory. Provides a multi-faceted approach to teaching language and culture to the novice French student. The emphasis of the course is an aural-oral proficiency without neglecting the other basic skills of grammar structure, phonetics, reading, and writing. Year course; must complete both semesters successfully in order to receive credit.

210.104 Learner Managed French Elements II (4.5) Prereq: 210.104. Limit 12. Year course; must complete both semesters successfully in order to receive credit. Special section for self-motivated students: On-line materials are designed for 1 and 1/2 more hours a week required for the course. Recommended for those who have some knowledge of French and need a review of the language. No Satisfactory/ Unsatisfactory.

Sec. 01 MW 6-7:15pm

210.202 (H) Intermediate French (3.5) Prereq: 210.201 or 210.203 or Webcape score between 320 and 420. Lab Req’d. Credit will not be given if previously enrolled in 210.201-202 or the equivalent. This course is for students who can express themselves more fluently in both their written and oral work and can analyze more difficult texts than in Intermediate French. Students will study authentic texts, including film “text”, and focus on their written and oral skills. Taught exclusively in French.

Sec. 01 MWF 9-9:50

210.204 (H) Advanced Intermediate French II (3.5) Prereq: 210.201 or 210.203 or Webcape score between 420 and 480. Credit will not be given if previously enrolled in 210.201-202 or the equivalent. Taught exclusively in French.

Sec. 01 MWF 9-9:50

210.302 (H) French Conversation and Composition II (3.5) Prereq: 210.301 or Webcape score and supplementary test (Contact Prof. Guillermard at claude@jhu.edu). Lab Req’d. This is a third-year language course intended to bridge the intermediate level and more advanced levels in French literature and cultural studies. Students will be given the opportunity to continue strengthening their linguistic skills. Individualized review of grammar based on the students’ written work. Students will be presented with a diversity of texts from current newspaper articles covering key national and international issues to a diversity of literary texts. Taught in French.

Sec. 01 MWF 9-9:50


Sec. 01 MWF 4:30-5:20pm

211.402 (H) La France Contemporaine II (3) Prereq: 210.302 or supplementary test or 210.301 and Perm. Req’d. We will explore with greater depth selected topics from La France contemporaine I while attempting to define the specific traits which define the French as a nation (for instance their humor, social manners, appreciation of haute couture, passion for cuisine and wine, use of slang, fondness for comics such as Tintin and Astérix et Obélix). Our discussion will include a more general consideration on which criteria form cultural myths and nationhood.

Sec. 01 MWF 12-12:50

211.425 (H) Look at France and the U.S. through the Lens of Social Sciences (3) Winckler

Sec. 01 T 2:40
GERMAN AND ROMANCE LANGUAGES AND LITERATURES

Limit 15 Prereq: 210.301-302 or supplementary test or Perm. Req’d.

This course will compare certain topics concerning the US and France and their political implications. We will see how the differences (if they exist) are reflected in discourses, practices, and observed facts. Analysis will include the difference of perspectives on race and class between the two societies, the debates about religion and "laïcité", the different conceptions of the State or of each country's exceptionalism. Special focus on methodological questions such as: what does 'comparing France and the US' mean? Which indicators should be chosen to establish the differences on each topic? To do so, this course will use the framework of social sciences such as sociology, political science, economics or history and a large body of documents.

211.430 (H) L’AFFAIRE DREYFUS (3)
Cook-Gailloud Limit 12
Prereq: 210.301-302 or supplementary test or Perm. Req’d.

This course will focus on the socio-political events that framed the Dreyfus Affair (anti-Semitism in 19th century France, caricatures and polemical writings in the press, the consequences of the Franco-Prussian War and of the Commune, the bipolar division that split French society into dreyfusards and antidreyfusards), as well as its long-term effects (the rise of the "intellectual" in public life, the creation of the Human Rights League, the consolidation of Zionism which led to the creation of a Jewish state.)

Sec. 01 F 1:30-4

212.202 (H) INTRODUCTION À LA LITTÉRATURE FRANÇAIS II (3)
Neefs/Roos Sec. 01 TTh 10:30-11:45
Prereq: Both semesters of 210.301-302, or at least one semester of 210.301-302 with a grade of "A" and written permission of the instructor
Readings and discussion of texts of various genres from the Middle Ages to the 20th century. The two semesters may be taken in either order. This sequence is a prerequisite to all further literature courses. Students may co-register with an upper-level course during their second semester.

Sec. 02 MWF 11-11:50

212.313 (H) ORPHÉE NOIR: VOIX AFRICAINES FRANCOPHONES (3)
Mobarek Limit 15
Prereq: 210.302 or Perm. Req’d.

Poèmes tirés de l'Anthologie de la nouvelle poésie nègre et malgache de Léopold Sédar Senghor et textes philosophiques et politiques définissant les fondements de l'africanité.

Sec. 01 TTh 9-10:15

212.330 (H) LE ROMAN NOIR FRANCOPHONE (3)
Giraud Sec. 01 M 2-4:30
Prereq: 210.201 or Perm. Req’d.
The significance of the "roman noir" in francophone literature of the twentieth century starting with an overview of its evolution. Authors: Manchette, Durtraz, Mad, Ntione, and Ngoye. Taught in French

212.416 (H) FRENCH ENLIGHTENMENT NOVEL (3)
Anderson Sec. 01 W 2-4:30
Prereq: 210.201 or Perm. Req’d.
The French Enlightenment was not a monolithic theoretical and universalizing program as its English name suggests, but, as Les Lumières implies, a complex historical event composed of three intertwined strains. This course will investigate the productive tension between the Lumières du savoir, the Lumières poétiques, and the Lumières du pouvoir that generated the greatest literary works from 1710 to the early Revolution. For full description, see http://www.wilda.org/Course/CourseVault/Undergrad/Enlighten/home.html

212.430 (H) SENIOR SEMINAR (3)
Russo Sec. 01 Th 2-4:30
Prereq: For French majors in their senior year only. An in-depth and closely supervised initiation to research and thinking, oral and written expression, which leads to the composition of a senior thesis in French.

212.502 FRENCH INDEPENDENT STUDY - LITERATURE
### GERMAN AND ROMANCE LANGUAGES AND LITERATURES

#### GERMAN

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sections</th>
<th>Times</th>
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<tbody>
<tr>
<td>210.162</td>
<td>ELEMENTARY GERMAN II (4.5)</td>
<td>Sec. 01</td>
<td>MTWF 9-9:50</td>
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<td>Mifflin</td>
<td>Sec. 02</td>
<td>MWF 10-10:50</td>
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<td></td>
<td>Prereq: 210.161 or appropriate score on placement exam</td>
<td>Sec. 03</td>
<td>T 10:30-11:20</td>
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<td>Continuation to the introduction to the German language and a development of reading, speaking, writing, and listening skills through the use of basic texts and communicative language activities. Language lab is required. Both semesters must be completed with passing grades to receive credit. May not be taken on a satisfactory/unsatisfactory basis</td>
<td>Sec. 04</td>
<td>T 10:30-11:20</td>
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<td>MTWF 12-12:50</td>
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<tr>
<td>210.262 (H)</td>
<td>INTERMEDIATE GERMAN II (3.5)</td>
<td>Sec. 01</td>
<td>MWF 9-9:50</td>
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<td>Wheeler</td>
<td>Sec. 02</td>
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<td>Prereq: 210.261 or placement exam</td>
<td>Sec. 03</td>
<td>MWF 11-11:50</td>
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<td>This course is designed to continue the four skills (reading, writing, speaking, and listening) approach to learning German. Readings and discussions are topically based and expanded upon through audio-visual materials. Students will also review and deepen their understanding of the grammatical concepts of German. Language lab is required. Taught in German</td>
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<td>210.264 (H)</td>
<td>INTERMEDIATE YIDDISH II (3)</td>
<td>Sec. 01</td>
<td>MWF 9:30-11:50</td>
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<td>B. Caplan</td>
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<td>Prereq: 210.263 or Perm. Req'd.</td>
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<td>Continuation to Intermediate Yiddish I.</td>
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<td>This course will focus on understanding the Yiddish language as a key to understanding the culture of Yiddish-speaking Jews. Emphasis will be placed on reading literary texts and historical documents. These primary sources will be used as a springboard for work on the other language skills: writing, listening, and speaking. Taught in German</td>
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<tr>
<td>210.362 (H)</td>
<td>ADVANCED GERMAN CONVERSATION &amp; COMPOSITION II: CONTEMPORARY GERMAN ISSUES (3)</td>
<td>Sec. 01</td>
<td>MTWF 10-10:50</td>
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<td></td>
<td>Mifflin</td>
<td>Sec. 02</td>
<td>MWF 12-12:50</td>
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<td>Prereq: 210.361 or equivalent score on placement test</td>
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<td>Topically, this course focuses on contemporary issues such as national identity, multiculturalism, and the lingering social consequences of major 20th century historical events. Readings include literary and journalistic texts, as well as radio broadcasts, internet sites, music and film. Emphasis is placed on improving mastery of German grammar, development of self-editing skills and practice in spoken German for academic use. Taught in German</td>
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<td>210.561</td>
<td>GERMAN INDEPENDENT STUDY -- LANGUAGE</td>
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<td>Mifflin</td>
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<tr>
<td>213.316 (H)</td>
<td>STORY, SONG, FOOD AND FILM: MODERN YIDDISH IDENTITIES (3)</td>
<td>Sec. 01</td>
<td>M 1:30-4</td>
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<td>B. Caplan</td>
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<td>Prereq: 210.361</td>
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<td>This course will examine a range of Jewish responses to modernity through the prism of Yiddish language and culture. The topic will be explored through a number of media, including text, song, and film. The course will include a small Yiddish language component, although all readings will be in English. Taught in English</td>
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<td>Cross-listed with Jewish Studies</td>
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<td>213.332 (H)</td>
<td>ZIONISM IN MODERN LITERATURE: JEWISH OR ISRAELI? (3)</td>
<td>Sec. 01</td>
<td>TTh 10:30-11:45</td>
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<td>M. Caplan</td>
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<td>Prereq: 210.361</td>
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<td>This course will be an advanced-undergraduate, writing-intensive examination of the interrelated themes of nationalism, Zionism, and the problems of the nation-state in modern Jewish literature of the past hundred years. Among the topics we will consider are the unique challenges of a diasporic culture relocating its national aspirations to an unfamiliar and often hostile environment, the controversies surrounding political nationalism within modern Jewish culture; the competition between languages in the formation of Israeli society, the character of Israeli national culture, the relationship of</td>
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GERMAN AND ROMANCE LANGUAGES AND LITERATURES

Israel's Jewish majority with its minority population, and the relationship of Israeli culture to the Jewish culture of the diaspora. To what extent does Israeli literature constitute a continuation of themes and techniques found in previous Jewish writing, and to what extent does it represent a new beginning? To what extent can Israeli literature be compared with other varieties of Jewish writing, particularly in the United States, and to what extent is this writing a unique cultural phenomenon? Although the majority of works discussed will be translated from Hebrew—including such leading figures of Israeli literature as S. Y. Agnon, S. Yizhar, Amos Oz, and David Grossman—we will also be considering works translated from Yiddish, German, and Arabic, as well as contemporary American writers such as Philip Roth and Michael Chabon. All readings and discussions conducted in English.

Cross-listed with Jewish Studies, English, and the Humanities Center

213.352 (H) FONTANE AND THE ADULTERY FILM (3) Kolarov Limit 20
The course will explore the life and works of poet and novelist Theodor Fontane on parallel tracks with the Hollywood adultery genre. Freud’s work on femininity will frame our experiment. Cross-listed with Film & Media Studies, Studies of Women, Gender, and Sexuality, and the Humanities Center

213.380 (H) GHOST STORIES, HAUNTED HOUSES AND OTHER OCCULT PHENOMENA (3) Tobias Limit 20
From the eighteenth-century poet E.T.A. Hoffmann to the modern writer W.G. Sebald, German authors have been obsessed with uncanny phenomena that blur the line between the natural world and the supernatural and animate creatures and inanimate things. We will explore these encounters with ghosts, automatons, and other apparitions. Readings in English and German; discussion in English. Cross-listed with the Humanities Center

213.401 (H) COLLECTING, EATING, WRITING, READING, BURNING - BOOKS (3) Schwarzwald Limit 20
This class will be dedicated to some of the myths and disenchantments surrounding books (with a focus on German Literature between 1800 and 1960). The book (of books) has been considered the container of God's inalterable Word, but is to be found at the origin and at the origin of History (not only of the West) as a never ending series of hermeneutic wars: the so-called wars of religion are wars around (the proper meaning of) a book as well as around the notion of book, its attracting and repulsing implications. Books have not only been written in order to be read, but also collected and destroyed, eaten, buried and burnt. What's in a book? The unfolding of some of this question's religious, literary, philosophical and political implications will be followed by fragments taken from the Bible, the Apocalypse according to John and the Talmud, as well as texts by Sebastian Brant and Cervantes (discussing the figure of the fool of books), Goethe and Jean Paul, Friedrich Nietzsche, Franz Rosenzweig and Walter Benjamin, documents related to the Bücherverbrennung on May 10, 1933, poems by Bertolt Brecht and Paul Celan, book-installations by Anselm Kiefer, and a short story by Jorge Luis Borges. Readings and discussion in German

213.419 (H) CRITICAL LOVE: THE THEORY AND PRACTICE OF LITERARY CRITICISM (3) Pahl Limit 20
"The Sandman," a fantastic, ironic, and uncanny story by the German Romantic E.T.A. Hoffmann will function as the cornerstone of this course. Around this self-reflexive piece of literature we will study some of the most important approaches to literary criticism from continental philosophy, German romanticism, psychoanalysis, hermeneutics, post-structuralism, deconstruction, postcolonial feminism, and queer theory. The course will

Cross-listed with Jewish Studies, English, and the Humanities Center

213.420 (H) COLLECTING, EATING, WRITING, READING, BURNING - BOOKS (3) Schwarzwald Limit 20
This class will be dedicated to some of the myths and disenchantments surrounding books (with a focus on German Literature between 1800 and 1960). The book (of books) has been considered the container of God’s inalterable Word, but is to be found at the origin and at the origin of History (not only of the West) as a never ending series of hermeneutic wars: the so-called wars of religion are wars around (the proper meaning of) a book as well as around the notion of book, its attracting and repulsing implications. Books have not only been written in order to be read, but also collected and destroyed, eaten, buried and burnt. What’s in a book? The unfolding of some of this question’s religious, literary, philosophical and political implications will be followed by fragments taken from the Bible, the Apocalypse according to John and the Talmud, as well as texts by Sebastian Brant and Cervantes (discussing the figure of the ‘fool of books’), Goethe and Jean Paul, Friedrich Nietzsche, Franz Rosenzweig and Walter Benjamin, documents related to the Bücherverbrennung on May 10, 1933, poems by Bertolt Brecht and Paul Celan, book-installations by Anselm Kiefer, and a short story by Jorge Luis Borges. Readings and discussion in German

213.421 (H) CRITICAL LOVE: THE THEORY AND PRACTICE OF LITERARY CRITICISM (3) Pahl Limit 20
"The Sandman," a fantastic, ironic, and uncanny story by the German Romantic E.T.A. Hoffmann will function as the cornerstone of this course. Around this self-reflexive piece of literature we will study some of the most important approaches to literary criticism from continental philosophy, German romanticism, psychoanalysis, hermeneutics, post-structuralism, deconstruction, postcolonial feminism, and queer theory. The course will
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<th>Course Code</th>
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<th>Section</th>
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<tr>
<td>213.502</td>
<td>GERMAN INDEPENDENT STUDY - LITERATURE (H)</td>
<td>Sec. 01</td>
<td>MWF 9-9:50</td>
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<td>213.510</td>
<td>GERMAN HONORS PROGRAM</td>
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**ITALIAN**

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<th>Course Code</th>
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<th>Section</th>
<th>Time</th>
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<tr>
<td>210.152</td>
<td>ITALIAN ELEMENTS II (4)</td>
<td>Zannirato</td>
<td>MWF 9-9:50</td>
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<td>Prereq: 210.151 or Placement Exam - Part I</td>
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<td>Part I: Students develop five basic skills: oral production, oral</td>
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<td>comprehension, written production, written comprehension and spoken</td>
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<td>interaction. All classes are conducted in Italian; oral participation</td>
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<td>in encouraged from the beginning. <strong>May not be taken</strong></td>
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<tr>
<td>210.252 (H)</td>
<td>INTERMEDIATE ITALIAN II (3.5)</td>
<td>Zannirato</td>
<td>MWF 9-9:50</td>
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<td>Prereq: 210.251 or Placement Exam - Parts I &amp; II</td>
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<td>Course provides further development of students' language</td>
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<td>skills through intensive listening, speaking, reading, writing</td>
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<td>and interaction activities. The course is conducted</td>
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<td>entirely in Italian. <strong>May not be taken</strong></td>
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<tr>
<td>210.352 (H)</td>
<td>ADVANCED ITALIAN CONVERSATION AND COMPOSITION (3.5)</td>
<td>Zannirato</td>
<td>MWF 9-9:50</td>
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<td>Limit 12 per section  Prereq: 210.351 or Placement Exam - Parts I, II, &amp; III</td>
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<td>Course presents a systematic introduction to a variety of</td>
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<td>contemporary cultural topics, emphasizing interplay, vocabulary</td>
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<td>building, style and clarity in writing. Texts drawn from</td>
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<td>different media and ample use of audio-visual and electronic</td>
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<td>materials will stress everyday spoken Italian. The course is</td>
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<td>conducted entirely in Italian. <strong>May not be taken</strong></td>
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<tr>
<td>214.251 (H)</td>
<td>SURVEY OF ITALIAN LITERATURE (3)</td>
<td>Stephens</td>
<td>TTh 9-10:15</td>
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<tr>
<td>214.371 (H)</td>
<td>IMAGINING MEDIEVAL ITALIAN CULTURE: THE NAME OF THE ROSE (3)</td>
<td>Stephens</td>
<td>T 2-4:30</td>
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<td>Prereq: Limit 20</td>
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<td>Il nome della rosa took the literary world by storm in</td>
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<td>1990, and since then has been a best-seller in many languages. It has</td>
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<td>also inspired numerous imitators and a major film. Although it is</td>
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<td>a work of imagination, it is an excellent means of exploring the</td>
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<td>culture of Italy in the time of Dante, Petrarch and Boccaccio. We</td>
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<td>will explore its numerous links to the literary, cultural, religious, and</td>
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<td>political history of medieval Italy. No prerequisites. There will</td>
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<td>be a special section for Italian majors. Cross-listed with Film &amp; Media</td>
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<td>Studies, History, Studies of Women, Gender, and Sexuality, the Humanities</td>
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<td>Center, and English</td>
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<td>214.465 (H)</td>
<td>DANTE, PETRARCH, AND BOCCACCIO: AN INTRODUCTION TO THREE CLASSICS OF ITALIAN</td>
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<td>M 2-4:30</td>
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<td>LITERATURE (3) Prereq: Limit 20</td>
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<td>Students will become acquainted with the artistic personalities and</td>
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<td>cultural significance of the founding fathers of Italian literature.</td>
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<td>214.562</td>
<td>ITALIAN INDEPENDENT STUDY</td>
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GERMAN AND ROMANCE LANGUAGES AND LITERATURES

PORTUGUESE

210.178 PORTUGUESE ELEMENTS (3.5) Bensabat-Ott
Limit 20
Prereq: 210.177 or Perm. Req’d.
This second semester of a one-year course is conducted entirely in Portuguese. It introduces students to the basic language skills: reading, writing, listening, speaking. The focus of the course is on oral communication, however, with extensive training in written and listening skills. Language lab is required. Students must complete both semesters with passing grades to receive credit. No Satisfactory/Unsatisfactory

210.278 (H) INTERMEDIATE/ADVANCED PORTUGUESE (3.5) Bensabat-Ott
Limit 20 Prereq: 210.277 or Perm. Req’d.
This second semester of a one-year course is conducted entirely in Portuguese. Emphasis is placed on vocabulary building, ease and fluency in the language through the use of a multi-faceted approach. Materials used immerse students with the cultures of Brazil, Portugal, and Portuguese-speaking Africa, and reflect the mix of cultures at work in contemporary Lusophone world. Lab work required. Both semesters must be completed with passing grades to receive credit. May not be taken Satisfactory/Unsatisfactory

210.392 (H) ADVANCED PORTUGUESE: LANGUAGE AND LITERATURE (3.5) Bensabat-Ott
Limit 20
Prereq: 210.278 or Perm. Req’d.
This third year Portuguese course focuses on reading, writing and oral expression. Under the supervision of the instructor, students will read one or two complete works by major Brazilian, Portuguese, and/or Afro-Portuguese writers each semester, followed by intensive writing and oral discussion on the topics covered. Grammar will be reviewed as necessary. Lab work required. Taught entirely in Portuguese. May not be taken Satisfactory/Unsatisfactory

211.394 (H) BRAZILIAN CULTURE AND CIVILIZATION Bensabat-Ott
Register accordingly:
Sec. 01: 3 credits (Course work in English) Limit 35
Sec. 02: 4 credits (Course work in Portuguese – Perm. Req’d.) Limit 10
This course is intended as an introduction to the culture and civilization of Brazil. It is designed to provide students with basic information about Brazilian history, art, literature, popular culture, theater, cinema, and music. The course will focus on how indigenous Asian, African, and European cultural influences have interacted to create the new and unique civilization that is Brazil today. The course is taught in English, but ONE extra credit will be given to students who wish to do the course work in Portuguese, permission of the instructor is required for this option. Those wishing to do the course work in English for 3 credits should register for Section 1. Those wishing to earn 4 credits by doing the coursework in Portuguese should register for Section 2. The sections will be taught simultaneously. Cross-listed with Latin American Studies

SPANISH

210.111 SPANISH ELEMENTS I (4) Weingarten
Limit 17
Prereq: Appropriate Placement Exam (S-Cape) score
Development of the four basic language skills of reading, writing, listening and speaking. Extensive use of an online component delivered via WebCT, sustained class participation, and three hourly exams (no midterm and no final). In order to receive credit for 210.111, 210.112 must also be completed with a passing grade. May not be taken Satisfactory/Unsatisfactory

210.112 SPANISH ELEMENTS II (4) Weingarten
Limit 17 per section
Prereq: 210.111 or appropriate
On-Line MWF 9-9:50
Sec. 02 MWF 10-10:50
Sec. 03 MWF 10-10:50
GERMAN AND ROMANCE LANGUAGES AND LITERATURES

Placement Exam (S-Cape) score
Continuation of Spanish Elements I.
Further development of the four basic language skills of reading, writing, listening and speaking. Extensive use of an online component delivered via WebCT, sustained class participation, and three hourly exams (no midterm and no final). Section 01 (Spring semesters) is offered totally online.
May not be taken Satisfactory/Unsatisfactory

210.211 (H)  INTERMEDIATE SPANISH I (4) Sec. 01 MWF 9-9:50
J. Gonzalez Limit 17 per section
Prereq: 210.112 or appropriate Placement Exam (S-Cape) score.
Continues building on the four essential skills for communication presented in Spanish Elements courses. Extensive use of an online component delivered via WebCT, sustained class participation, and three hourly exams (no midterm and no final). May not be taken Satisfactory/Unsatisfactory

210.212 (H)  INTERMEDIATE SPANISH II (4) Sec. 01 MWF 9-9:50
J. Gonzalez Limit 17 per section
Prereq: 210.211 or appropriate S-Cape score.
Continues building on the four essential skills for communication presented in Spanish Elements courses and in Intermediate Spanish I. Extensive use of an online component delivered via WebCT, sustained class participation, and three hourly exams (no midterm and no final). May not be taken Satisfactory/Unsatisfactory

210.311 (H)  ADVANCED SPANISH I (3) Sec. 01 MWF 9-9:50
Garcia-Augustin Limit 15 per section
Prereq: 210.212 or 210.213 or appropriate S-Cape score
Advanced Spanish I is designed to improve the four skills: Reading, writing, listening and speaking, essential for communication. This third-year course aims to improve the students' reading and writing skills by focusing on various types of texts. Students will also engage in more formal levels of written communication. This course also focuses on refinement of grammar. Students are exposed to a deeper understanding of the cultures of the Spanish-speaking world. Extensive use of an online component delivered via WebCT, sustained class participation, and three hourly exams (no midterm and no final). May not be taken Satisfactory/Unsatisfactory

210.312 (H)  ADVANCED SPANISH II (3) Sec. 01 MWF 9-9:50
Garcia-Augustin Limit 15 per section
Prereq: 210.311 or appropriate S-Cape score
This third-year course aims at improving the students' oral skills by focusing on the use of standard, spoken Spanish with an emphasis on colloquial and idiomatic expressions. Students will also engage in more formal levels of communication by discussing assigned literary and non-literary topics. They will increase their listening skills through movies and other listening comprehension exercises. The course will also focus on vocabulary acquisition. May not be taken Satisfactory/Unsatisfactory

210.313 (H)  MEDICAL SPANISH (3) Sanchez Limit 15
Prereq: 210.311 or appropriate S-Cape score
Students will increase their vocabulary and practice grammar structures closely related to the medical and health administration professions. All language skills are equally emphasized. Highly recommended to students in any of the health-related majors. There will be an intensive on-line component. May not be taken Satisfactory/Unsatisfactory

210.315 (H)  LEGAL SPANISH (3) Sanchez/ I. Gonzalez Limit 15
Prereq: 210.311 or appropriate S-Cape score
Students will increase their vocabulary and practice grammar structures closely related to judicial services. All language skills are equally emphasized. Highly recommended for students interested in a career in Law, Business and International Relations. There will be an intensive on-line component. May not be taken Satisfactory/Unsatisfactory
CONVERSATIONAL SPANISH (3)  
Sanchez  Limit 15  Prereq: 210.311 or appropriate S-Cape score  
This course is designed for students who have attained an advanced level of proficiency in Spanish 210.312 and wish to improve their oral skills by focusing on the use of standard, spoken Spanish with an emphasis on colloquial and idiomatic expressions. Students are exposed to a deeper understanding of the cultures of the Spanish-speaking world through movies and other listening comprehension exercises. The course will mainly focus on conversation and vocabulary acquisition. This course is highly recommended for students going to JHU study abroad programs. May not be taken Satisfactory/Unsatisfactory  
Sec. 01  MWF 11-11:50

ADVANCED SPANISH COMPOSITION (3)  
Garcia-Augustin  Limit 12  Prereq: 210.312 or appropriate S-Cape score  
This third-year course aims at improving the students’ reading and writing skills by focusing on various types of texts. Students will also engage in more formal levels of written communication on both literary and non-literary topics. The course also focuses on refinement of grammar. May not be taken Satisfactory/Unsatisfactory  
Sec. 01  MWF 12-12:50

CURSO DE TRADUCCIÓN PARA LAS PROFESIONES (SPANISH TRANSLATION) (3)  
Students will learn the basics of translation theory and be presented with the tools needed (specialized dictionaries, web resources, etc) for the translation of literature, business, medical, legal, technological, political, and journalistic texts from Spanish to English and English to Spanish. May not be taken Satisfactory/Unsatisfactory  
Sec. 01  TTh 12-1:15

SPANISH LANGUAGE INTERNSHIP (3)  
Sanchez  Limit 12  Prereq: 210.411  
Internship involves a specially designed project related to student’s minor concentration. Provides an opportunity to use Spanish language in real world contexts. May be related to current employment context or developed in agencies or organizations that complement student’s research and experimental background while contributing to the improvement of language proficiency. May not be taken Satisfactory/Unsatisfactory  
Sec. 01  MW 1:30-2:45

CURSO DE PERFECCIONAMIENTO (3)  
Sanchez  Limit 12  Prereq: 210.311 and 210.312 plus one of the following: 210.313, 210.314 or 210.315; or appropriate S-Cape score  
This course is designed for students who, having attained an advanced level of proficiency, wish to master Spanish grammar as well as oral and written expression. The course seeks to acquaint the students with a wider range of idiomatic expression and usages than they have previously managed. May not be taken Satisfactory/Unsatisfactory  
Sec. 01  MW 12-1:15

MODERN LATIN AMERICAN CULTURE (3)  
Carrion  Limit 25  Prereq: 210.212 or 210.213 or appropriate S-Cape score  
An introduction to the literature and culture of Latin America from the formation of independent states through the present—in light of the social, political, and economic histories of the region. Taught in Spanish. May not be taken Satisfactory/Unsatisfactory  
Sec. 01  TTh 9-10:15

INTRODUCTION TO SPANISH LITERATURE (3)  
McMenamin  Limit 20  Prereq: 210.311 or appropriate S-Cape score  
A writing intensive course designed to develop the student’s linguistic proficiency through the careful reading of a wide-range of literary texts written in Spanish, (1) help the student develop and refine the skills and terms required for advanced study in literature, and (1) provide the student with an overview of Spanish
GERMAN AND ROMANCE LANGUAGES AND LITERATURES

and Spanish-American literary history. Although the course focuses on texts written in Spanish, students who go on to study literature in other languages will benefit from the critical skills developed in this course. This course is required for the Major in Spanish.

215.336 (H) DON QUICHOTE (2) Sieber Limit 12 Pieroq 210.311-312 or equivalent A close reading and discussion primarily in Spanish of Cervantes’ masterpiece, with concentration on its major themes and contributions to the formation of the modern novel.

Sec. 01 T 2-4:30

215.456 (H) LITERATURE AND FILM: THE CASE OF MANUEL PUIG (3) E. Gonzalez Limit 20 Close reading of select works by Manuel Puig, the outstanding Argentine writer of his generation. Readings examined in relation to relevant movies and film theory. Taught in English. Readings in Spanish and English. Cross listed with Program in Latin American Studies, Film and Media Studies, Studies of Women, Gender, and Sexuality, and the Humanities Center

Sec. 01 Th 2-4:30

215.485 (H) INTRODUCTION TO SPANISH MEDIEVAL LITERATURE (3) Aitzchul Limit 20 This course examines some of the best known works of Medieval Spain. Through literary history students become familiar with medieval Christian Spanish society and culture. Topics include chivalry and aristocratic life, medieval biographies and lives of saints, languages and religions of Iberia, as well as short stories and their rewritings. Readings are in Modern Spanish or English and include Mio Cid, Conde Licianor, Libro de buen amor, Amadis de Gaula, and Celestina.

Sec. 01 W 2-4:30

215.496 (H) FORMATIONS OF THE UNCONSCIOUS: BUÑUEL, GARCIA LORCA AND DALI (3) Egginton Limit 20 In this course we will study the enormous contribution to art, literature, and thought made by three Spaniards in the early part of the twentieth century. Rafael, Garcia Lorca, and Dalí each revolutionized his specific artistic medium, and were influential in each other’s lives and work as well. We will examine their body of work and their relationship to psychoanalysis, particularly the work of Jacques Lacan, whose seminar we will also be reading.

Sec. 01 M 2-4:30

215.526 SPANISH INDEPENDENT STUDY

Sec. 01 TBA

UNDERGRADUATE CROSS-LISTINGS

040.129 (H) DRINKING PARTIES, HOMOEROTICISM, AND GENDER POLITICS (3) Yatromanolakis Limit 80 Cross-listed with Anthropology, Classics, History, Political Science, and Studies of Women, Gender, and Sexuality

Sec. 01 TTh 1:30-2:45

300.368 (H) DO MIRACLES (STILL) HAPPEN? (3) de Vries Cross-listed with the Humanities Center, Philosophy, Anthropology, and Political Science

Sec. 01 Th 1:30-4

300.376 (H) EUROPEANS CONCEPTION OF THE NEW MAN, 1789-1945 (3) Geroulanos Limit 35 Cross-listed with History and the Humanities Center

Sec. 01 W 5-8pm

GRADUATE COURSES

FRENCH

210.601 FRENCH READING AND TRANSLATION Guilmard Limit 15 Intensive study of French grammar structure plus experience in reading and translating expository prose. Students do independent work (vocabulary acquisition and translation) in their particular field of study. Designed for graduate students in other departments who need to complete a language requirement in French. Open to undergraduates only with the permission of the language coordinator.

Sec. 01 TTh 9-10:15
Anderson

Limit 15

In its attempt to realize fully the potential of a group description of knowledge, the Encyclopédie of Diderot and d’Alembert displays the program of the philosophes in a particularly intense and idiosyncratic form. This intellectual dialogue will be studied through the investigation of several different subjects treated in the Encyclopédie; for example, the theory of the encyclopedia itself, history, natural history, literature, medicine, theories of language.

Heller-Roazen

Limit 15

This seminar will investigate the multiple dimensions of the medieval voice: grammatical, logical, musical, and poetic. Topics to be discussed include the relation between sound and voice, the elements of writing, rational and irrational noise, tone and timbre, syllabification, and rhyme. Authors to be discussed include Aristotle, Priscian, Boethius, Anselm, Guillaume de Puylaurens, Raimbaud de Vaquerias, Arnaut Daniel, Dante, Gervais de Bus and Eustache Deschamps.

Abecassis

Limit 15

A close study of representative prose works of Breton, Aragon and Bataille in the context of surrealist theory. The course will be textual in nature, but with continual references to Sade, Lautréamont and Freud.

Schestag

Limit 15

Since Greek antiquity the comparison of words with flowers has been a common place in European theories of poetry and language. If there was a science dedicated to this strange relation, its name could be anthology. The question to be found at the heart of the consideration of words as flowers (not just as fleurs rhétoriques) is the question of expressivity in general: the expressive – or inexpressive – character of words as well as flowers. The discussion of this peculiar pressure on words (as well as on flowers), its implications and complications, in order to express expressively itself, will turn around poems by Angelus Silesius, Hölderlin and Leopardi – La Ginestra –, Baudelaire’s sketches for a preface to Les fleurs du mal, Mallarmé’s Les fleurs and Crise de vers, an essay by Bataille – Le langage des fleurs –, a book by Jean Paulhan – Les fleurs de Tarbes – as well as recently published dossier by Francis Ponge, entitled L’opinion changée quant aux fleurs. – Readings in French, Italian and German, discussion in French and English.

Neefs

Limit 15

Quelle forme de connaissance apporte l’œuvre littéraire ? Quels rapports entretient-elle avec les savoirs de son temps ? Savoirs sur la société, sur la psychologie humaine, sur le monde, concurrence avec les savoirs « scientifiques », nous interrogerons à l’aide de quelques exemples particulièrement significatifs la portée cognitive des œuvres littéraires. Les œuvres proposées sont, parmi d’autres exemples qui seront choisis avec les étudiants du séminaire : Balzac, La Peau de chagrin, La recherche de l’Absolu ; Stendhal, De l’Amour ; Flaubert, Bouvard et Pécuchet ; Zola, Le Docteur Pascal ; Proust, Le Temps retrouvé.

Russo

Limit 15

An exploration of the emergence of aesthetic experience at a time when there was no such thing as an autonomous aesthetic object separate from other forms of value, such as social distinction and the exaltation of energy. Aesthetics was a way of organizing cognition, experience and feelings linked to the body, through such notions as sympathy, taste and spirit, aesthetic discourse frames the beholder both as a cognitive, feeling subject, and as a social being member of an elite community defined culturally and politically. Topics will include: the
GERMAN AND ROMANCE LANGUAGES AND LITERATURES

epistemology of confused perception and the poetics of incompleteness; the je ne sais quoi and the sublime; the dialectics of pleasure and pain, taste and decadence. Works by Félibien, Bouhours, Dubois, Bosley, Fénelon, Mativel, Montesquieu, Diderot, Leibniz, Smith, Burke, Lessing.

212.801 FRENCH INDEPENDENT STUDY
Sect. 01 – Nichols
Sect. 02 – Neefs
Sect. 03 – Russo
Sect. 04 – Jeanneret
Sect. 05 – Anderson

212.802 FRENCH DISSERTATION RESEARCH
Sect. 01 – Nichols
Sect. 02 – Neefs
Sect. 03 – Russo
Sect. 04 – Jeanneret
Sect. 05 – Anderson

212.803 FRENCH PROPOSAL PREPARATION

GERMAN

210.662 READING AND TRANSLATING GERMAN FOR ACADEMIC PURPOSES II
Wheeler
Limit 15

Graduate students only
This course is designed for graduate students in other departments who wish to gain a reading knowledge of the German language and translation practice from German to English. The second semester is a continuation and assumes basic knowledge of German grammar and vocabulary. Focus on advanced grammatical structures. For certification or credit.

Sec. 01 MW 9-9:50

213.640 THE CONCEPT OF PHILOSOPHICAL AESTHETICS
Sec. 01 W 4:30-6:30pm, F 12-1:50

Menke
Limit 15
Meets 2/11-3/7

"Aesthetics" is Alexander Baumgarten’s title for a new way of thinking about the (liberal) "arts" in the framework of the basic concepts of modern philosophy, like (re-)presentation, activity, subjectivity, humanity, and freedom. Since Heidegger’s lectures on Nietzsche, this relation between aesthetics and philosophical modernity has often been described in such a way that the discourse of philosophical aesthetics expresses an “ideology” (as de Man and Eagleton have put it) of reconciliation or foundation. The course wants to question this interpretation by way of reading texts mainly from the German aesthetic debate in the 18th century. The course will especially focus on the development of two concepts which are of central importance for any critique of metaphysics till today: the concepts of “force” (over against “ability”) and “self-reflection” (over against “self-grounding”). Cross-listed with the Humanities Center and Philosophy

213.646 FANTASY NARRATIVES OF THE 19TH CENTURY
Sec. 01 Th 12-1:50

M. Caplan
Limit 15

This course will be a graduate seminar considering in structural and historical terms the significance of fantastic genres in the era of literary realism. Among the topics we will consider are the place of folklore and oral storytelling techniques in creating fantastic or anti-realistic narratives, the persistence of pre-modern narrative genres such as satire, monologue, and fable in 19th century fantasy, the uneasy relationship between romanticism and modernity, the appeal of non-realistic genres to the peripheral cultures of 18th century modernity, the relationship of new literary genres such as the detective story or science-fiction to earlier fantastic motifs, and the uses of fantastic genres as a subversive critique of modern rationalism and the myth of progress. The overarching theme of the course will be the extent to which 19th century fantasy might be considered a precursor to specific trends in 20th century modernism. Authors to be considered will include Reb Nahman of Breslov, E.T.A. Hoffmann, Edgar Allen Poe, Gerard de Nerval, Nikolai Gogol, Gustave Flaubert, Mendele Moykher-Sforim, Charles Chesnutt, and Sholem Aleichem. These writers will be considered comparatively in the light of theoretical discussions by, among others, Freud, Benjamin, Horkheimer and Adorno, Deleuze and Guattari, Todorov,
GERMAN AND ROMANCE LANGUAGES AND LITERATURES

and Henry Louis Gates. All readings and discussions conducted in English. Cross-listed with English and the Humanities Center.

213.659 RHYTHM Pahl
Limit 15 Starting from Hölderlin’s poetry and poetological reflections, we will look to Klopstock’s free meters and to Celan’s work with a shattered language. We will analyze the rhythmic interplay of various elements of poetry such as meter, syntax, visual layout, tone and lexicon. Rhythm will concern us in its potential to disrupt or dissolve set shapes, dispositions, and ideas. The aim is to consider poetic rhythm as a form of critique.

Sec. 01 M 4:30-6:30pm

213.671 THE BILDUNGSROMAN AND ITS CRITIQUE Tobias
Limit 15 Departing from Wilhelm Meisters Lehrjahre and Wieland’s Geschichte des Agathon, this course will consider how the Bildungsroman was conceived in the 18th and 19th centuries in texts by Blankenburg, Morgenstern, Schlegel, Hegel, and Dilthey.

Sec. 01 W 12-1:50

213.800 INDEPENDENT STUDY - GERMAN

Sect. 01 – Staff
Sect. 02 – Tobias
Sect. 03 – Pahl
Sect. 04 – M. Caplan

213.812 DIRECTED DISSERTATION RESEARCH - GERMAN

Sect. 01 – Staff
Sect. 02 – Tobias
Sect. 03 – Pahl
Sect. 04 – M. Caplan

213.813 GERMAN PROPOSAL PREPARATION

ITALIAN

214.690 HOW TO UNDERSTAND AND DESCRIBE CONTEMPORARY ITALIAN CITIES: FROM MANZONI TO PIOVENE Poli
Limit 15 In the course I will propose a portrayal of urban life in Italy focusing on middle size cities such as Parma, Mantua, Venice, Siena and the likes. A comparison with American cities will come as a consequence of the description. I will analyze urban studies and urban descriptions presented in different writing styles such as in journalism, in geographical essays and in literature at large. The course’s main focus will be the analysis of the writings of a number of (mainly) Italian authors that in the last two centuries have reported on city life from diverse viewpoints. In ten classes of two hours each, I will initially define the modern urban phenomenon. In the two following classes I will describe Italian and European urban geography as it has been described by writers in different periods. In the classes from fourth to seventh I will deal with a critical analysis of selected texts examining four main characteristics of urban life: human proximity, diversity, anonymity and the irresolvable conflict between freedom (Weber’s ‘Stadluft macht frei’) and organization.

Sec. 01 Th 4:30-6:30pm

214.748 VICO AND THE OLD SCIENCE Stephens
Limit 15 Giambattista Vico proposed a new science, but in relation to what? We shall read La scienza nuova against the background of some of the texts and ideas that inspired Vico’s redefinitions. Cross-listed with English, the Humanities Center, and Philosophy.

Sec. 01 W 12-1:50

214.765 CASTIGLIONE AND DELLA CASA Forni
Limit 15 The students will become acquainted with two of the most influential books of conduct written in the Renaissance: the Cortegiano and the Galateo.

Sec. 01 T 12-1:50

214.861 ITALIAN INDEPENDENT STUDY

Sect. 01 – Stephens
Sect. 02 – Forni
Sect. 03 – Celenza

214.862 ITALIAN DISSERTATION RESEARCH

Sect. 01 – Stephens
Sect. 02 – Forni
Sect. 03 – Celenza
GERMAN AND ROMANCE LANGUAGES AND LITERATURES

214.863 ITALIAN PROPOSAL PREPARATION

SPANISH

215.856 BUENOS AIRES METROPOLIS
Sec. 01 T 12-1:50
E. Gonzalez, Limit 15
From turn of the century to turn of the century, an exploration of lives and themes in the cultural and political history of the Capital of an Unknown Empire.

215.686 ALL ABOUT ZIZEK
Sec. 01 Th 12-1:50
Egginton
Limit 15 - In this seminar we will undertake a critical exploration of the work of today’s most visible and influential philosopher and public intellectual. We will read several of Slavoj Zizek’s most important books, as well as view two films, “Zizek,” and “A Perver’s Guide to Cinema.” At issue will be his adaptation of Lacanian psychoanalysis for political theory and cultural studies. Cross-listed with the Humanities Center and Philosophy.

215.738 NOVELAS EJEMPLARES DE CERVANTES
Sec. 01 W 2:30-4:20
Sieber
Limit 15 - A close reading of Cervantes’ short stories, with concentration on their literary tradition & their relationship to some of his other works. Will also investigate Spanish court society, politics, and history between 1598 & 1621. Course will meet at the Peabody Library.

215.826 SPANISH INDEPENDENT STUDY
Sec. 05 - E. Gonzalez
Sec. 05 - Staff
Sec. 04 - Sieber
Sec. 04 - Egginton

215.827 SPANISH DISSERTATION RESEARCH
Sec. 04 - E. Gonzalez
Sec. 03 - Staff
Sec. 03 - Sieber
Sec. 02 - Egginton

215.828 SPANISH PROPOSAL PREPARATION

GRADUATE CROSS-LISTINGS

300.624 THE SECULAR LIVES OF GRACE de Vries
Sec. 01 T 1-3:50
Cross-listed with Philosophy, the Humanities Center, Anthropology, and Political Science

GILMAN COURSES IN THE HUMANITIES
Please refer to the departmental listings for complete information regarding these courses.

HISTORY

100.371 THE GLOBAL ECONOMY OF THE 20th CENTURY
Galambos

PHILOSOPHY

150.205 INTRODUCTION TO MODERN PHILOSOPHY
Williams, Michael

HISTORY

100.103 (H,S) HISTORY OF OCCIDENTAL CIVILIZATION: EUROPE AND THE WIDER WORLD (D) Brooks
(W) Sec. 01 MW 11-11:50
Limit 15 per section
A survey of European history in the period from the Renaissance and Reformation to the late 18th century.
HISTORY

100.104 (H/S) HISTORY OF OCCIDENTAL CIVILIZATION: EUROPE AND THE WIDER WORLD (3) Moss
Limit 15 per section
Lec. Th 9-9:50
Sec. 01 MW 12-12:50
02 Th 10-10:50
03 Th 11-11:50
04 Th 12-12:50
05 Th 1-1:50
06 Th 2-2:50
07 Th 3-3:50
08 Th 4-4:50
09 Th 5-5:50
10 F 9-9:50
11 F 10-10:50
12 F 11-11:50

100.122 (H/S) HISTORY OF AFRICA (3) Berry
Limit 15 per section
Lec. Th 9-9:50
Sec. 01 MW 10-10:50
02 F 10-10:50
03 F 11-11:50

100.155 (H/S) MAKING AMERICA:
IMMIGRATION, RACE, AND CITIZENSHIP (3) Shell-Weiss
Limit 15 per section
Lec. Th 10-10:50
Sec. 01 MW 10-10:50
02 Th 10-10:50
03 Th 11-11:50
04 Th 11-11:50

100.161 (H/S) JEWS AND CHRISTIANS IN WESTERN EUROPE: CONFLICT AND CONCORD FROM LATE ANTIQUITY TO THE AGE OF EXPLORATION (3) Rose
Limit 15 per section
Lec. Th 11-11:50
Sec. 01 MW 12-12:50
02 MW 11-11:50
03 Th 12-12:50
04 Th 1-1:50

100.194 (H/S) UNDERGRADUATE SEMINAR IN HISTORY (3) Moss
Limit 45
Dept. majors only
Lec. M 1-1:50
Sec. 01 M 1:30–4

100.208 (H/S) EARLY CHINA: NEOLITHIC TO SONG (3) Meyer-Fong
Limit 15 per section
Lec. F 9-9:50
Sec. 01 MW 11-11:50
02 F 10-10:50
03 F 11-11:50
04 F 12-12:50

100.215 (H/S) RUSSIA AND THE SOVIET UNION AS EMPIRE (3) Verbitsky
Limit 15
Lect. TTh 1:30-2:45
Sec. 01 MW 1:30-2:45

100.218 (H/S) THIS ALMOST CHOSEN PEOPLE: POPULAR RELIGION IN U.S. HISTORY (3) Matsui
Limit 25
Lect. TTh 1:30-2:45
Sec. 01 MW 1:30-2:45

100.322 (H/S) THE HISTORY OF AFRICAN AMERICANS AT THE JOHNS HOPKINS UNIVERSITY (3) Shell-Weiss
Limit 12
Lect. Th 1:30-2:45
Sec. 01 Th 1:30-2:45

Additional notes:
- Cross-listed with Africana Studies
- Cross-listed with Jewish Studies
- Cross-listed with Africana Studies
- Cross-listed with Africana Studies
- Cross-listed with Africana Studies
- Cross-listed with Africana Studies
- Cross-listed with East Asian Studies
- Cross-listed with Jewish Studies
- Cross-listed with Africana Studies
- Cross-listed with Africana Studies
- Must be taken in sequence
- Required for all history majors and normally taken during the sophomore year.
- Deals with the elements of historical thinking and writing.
- Includes discussions of primary sources in discussion sections and extensive use of visual material in lectures.
HISTORY

research project focusing on this still largely unexplored and undocumented history, and will receive training in oral history methodology as well as kindred historical research methods. Projects will be published as part of The African Americans at the Johns Hopkins Institutions project. More information about the project itself can be found online at: http://afam.nts.jhu.edu

Cross listed with Africana Studies, Sociology, and Public Health

100.329 (H,S) CHINESE THOUGHT (3) Lievens
Limit 30 Chinese classical philosophy, Confucianism, and Daoism. Cross-listed with East Asian Studies

100.371 (H,S) THE GLOBAL ECONOMY OF THE 20TH CENTURY (3) Galambos
Limit 15 per section
This course traces the global economy from the first through the third industrial revolutions. Gilman course in the Humanities

100.390 (H,S) VIOLENCE TO END VIOLENCE: SLAVERY, ANTI-SLAVERY AND THE COMING OF THE CIVIL WAR (3) Walters
Limit 35 An examination of violence in pre-Civil War opposition to and defenses of slavery.

100.426 (H,S) POPULAR CULTURE IN EARLY MODERN EUROPE AND THE UNITED KINGDOM (3) Marshall
Limit 30 Witchcraft, magic, carnivals, riots, folk tales, gender roles, fertility cults and violence especially in Britain, Germany, France, and Italy.

100.428 (H,S) LONDON IN THE TWENTIETH CENTURY (3) Walkowitz
Limit 20
This course investigates the history of London between 1900 and 1960. The following themes are explored: the built environment, the local and the global, policing and crime, sexual scandal, popular entertainments and erotic pleasure, consumer culture and the media, cultural imperialism, the experience of war, social democracy, and the emergence of a multi-racial urban society. Cross-listed with Studies of Women, Gender, and Sexuality

100.433 (H,S) CENSORSHIP IN EUROPE AND THE U.S. (3) Jelavich
Limit 20
This undergraduate research seminar will examine censorship policies and debates from the eighteenth century to the present. In addition to discussion of common readings, each student will choose a censorship case to research and present to the class.

100.440 (H,S) THE REVOLUTIONARY EXPERIENCE IN LATIN AMERICA (3) Knight
Limit 20 Comparative examinations of revolutionary political changes in Haiti, Mexico, Bolivia, and Cuba. Cross-listed with Latin American Studies

Cross-listed with Jewish Studies and Latin American Studies

Sec. 01 TTh 10:30-11:45

Sec. 01 MWF 9-9:50

Sec. 01 W 1:30-4:30

Sec. 01 TTh 10:30-11:45

Sec. 01 TTh 10:30-11:45
### HISTORY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Instructor</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.498 (H,S)</td>
<td>COLLOQUIUM: HISTORY OF FAMILY AND GENDER IN THE UNITED STATES (Fall)</td>
<td>3</td>
<td>Ditz</td>
<td>MW 12-1:15</td>
</tr>
<tr>
<td></td>
<td>Continuing themes include history of emotions, varieties of family life as conditioned by race, ethnicity, and class; gender equality/inequality; politics of sexuality. Two special topics are: intermarriage (aka, social regulation of love and race/ethnicity) and 20th century consumer culture. Course focuses on early America through the mid-19th century, but we also discuss contemporary debates about gay marriage and new technologies of reproduction. Cross-listed with Studies of Women, Gender, and Sexuality</td>
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<tr>
<td>040.129 (H)</td>
<td>DRINKING PARTIES, HOMOEOTICISM, AND GENDER POLITICS (Fall)</td>
<td>3</td>
<td>Yatromanolakis</td>
<td>TTh 1:30-2:45</td>
</tr>
<tr>
<td></td>
<td>Cross-listed with Anthropology, German and Romance Languages, Classics, Political Science, and Studies of Women, Gender, and Sexuality</td>
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</tr>
<tr>
<td>214.371 (H)</td>
<td>IMAGINING MEDIEVAL ITALIAN CULTURE: THE NAME OF THE ROSA (Fall)</td>
<td>3</td>
<td>Stephens</td>
<td>T 2-4:30</td>
</tr>
<tr>
<td></td>
<td>Cross-listed with Film &amp; Media Studies, German and Romance Languages, Studies of Women, Gender, and Sexuality, the Humanities Center, and English</td>
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</tr>
<tr>
<td>300.376 (H)</td>
<td>EUROPEANS CONCEPTION OF THE NEW MAN, 1789-1945 (Fall)</td>
<td>3</td>
<td>Geroulanos</td>
<td>W 5-8pm</td>
</tr>
<tr>
<td></td>
<td>Cross-listed with the Humanities Center and German and Romance Languages</td>
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<tr>
<td>100.502</td>
<td>INTERNSHIP</td>
<td></td>
<td>Staff</td>
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</tr>
<tr>
<td>100.508 (H,S)</td>
<td>SENIOR THESIS</td>
<td>3</td>
<td>Ryan</td>
<td>T 6-8pm</td>
</tr>
<tr>
<td></td>
<td>Dept. Majors only A seminar supervised by the Director of Undergraduate Studies and designed to provide a forum for collective exchange among seniors undertaking the senior thesis. All students undertaking the senior thesis must register and attend.</td>
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<tr>
<td>100.536</td>
<td>INDEPENDENT STUDY</td>
<td></td>
<td>Staff</td>
<td></td>
</tr>
<tr>
<td>100.634</td>
<td>SPAIN AND ITS EMPIRE</td>
<td>3</td>
<td>Kagan</td>
<td>TBA</td>
</tr>
<tr>
<td>100.650</td>
<td>THE AMERICAN SOUTH</td>
<td>3</td>
<td>Johnson</td>
<td>Th 2-3:50</td>
</tr>
<tr>
<td>100.678</td>
<td>RESEARCH SEMINAR: EARLY MODERN COLONIAL BRITISH AMERICA 1600-1750</td>
<td>3</td>
<td></td>
<td>TBA</td>
</tr>
<tr>
<td>100.696</td>
<td>PROBLEMS IN AMERICAN SOCIAL AND CULTURAL HISTORY</td>
<td>3</td>
<td></td>
<td>TBA</td>
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<tr>
<td></td>
<td>Walkers Limit 15 An intensive seminar in topics in US social and cultural history, 1890s-1970s</td>
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<tr>
<td>100.710</td>
<td>MODERN LATIN AMERICA</td>
<td>3</td>
<td>Knight</td>
<td>W 2-3:50</td>
</tr>
<tr>
<td></td>
<td>Knight Limit 15 Selected themes in Modern Latin America will be discussed along with relevant bibliographies.</td>
<td></td>
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<tr>
<td>100.716</td>
<td>CULTURAL THEORY FOR HISTORIANS (Fall)</td>
<td>3</td>
<td>Advrich</td>
<td>T 10-11:50</td>
</tr>
<tr>
<td></td>
<td>Readings include Benjamin, Horkheimer, Adorno, Barthes, Debord, Baudrillard, Foucault, Bourdieu, and de Certeau</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>100.722</td>
<td>TOPICS IN AFRICAN HISTORY</td>
<td>3</td>
<td>Berry</td>
<td>M 2-3:50</td>
</tr>
<tr>
<td></td>
<td>Berry Limit 10 Methods of historical inquiry in African historiography with emphasis on research design, Cross-listed with Africana Studies</td>
<td></td>
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</tr>
<tr>
<td>100.736</td>
<td>EARLY MODERN BRITAIN</td>
<td>3</td>
<td>Marshall</td>
<td>Th 11-1:20</td>
</tr>
<tr>
<td>100.754</td>
<td>ADVANCED TOPICS IN CHINESE HISTORY: EARLY MIDDLE PERIOD</td>
<td>3</td>
<td>Meyer-Fong</td>
<td>W 1-2:50</td>
</tr>
<tr>
<td></td>
<td>Meyer-Fong Limit 12 This course will survey and attempt to contextualize recent developments in the historiography of China’s “early” and “middle” periods. Intended for graduate students, this class is open to advanced undergraduates who have taken either East Asian Civilizations or Neolithic-Song - or by permission of instructor. Cross-listed with East Asian Studies</td>
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</tr>
<tr>
<td>100.756</td>
<td>THE ENLIGHTENMENT AND THE FRENCH REVOLUTION</td>
<td>3</td>
<td>Bell</td>
<td>F 10-11:50</td>
</tr>
<tr>
<td></td>
<td>Bell Limit 10 Graduate reading course on key topics in the history of 18th century France</td>
<td></td>
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</tr>
<tr>
<td>100.764</td>
<td>COMPARATIVE WORLD HISTORY</td>
<td>3</td>
<td></td>
<td>T 4-5:50pm</td>
</tr>
<tr>
<td></td>
<td>Staff Limit 15 Exploration of recent work in European and</td>
<td></td>
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<tr>
<td>100.766</td>
<td>PROBLEMS IN WOMEN'S HISTORY</td>
<td>3</td>
<td>Walkowitz/Ditz</td>
<td>T 12-2:20</td>
</tr>
</tbody>
</table>
## HISTORY

US women’s history, focusing on some of the following: sexuality, cultural production, politics, family formation, work, religion, differences, civic orders.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.776</td>
<td>19th Century U.S.</td>
<td>Ryan</td>
<td>1.00</td>
<td>M 1-3:30</td>
</tr>
<tr>
<td>100.782</td>
<td>Seminar Staff Limit 50</td>
<td>Staff</td>
<td>3.00</td>
<td>W 4-5:50PM</td>
</tr>
<tr>
<td>100.784</td>
<td>Seminar: Medieval Europe</td>
<td>Staff</td>
<td>3.00</td>
<td>Th 4-5:50PM</td>
</tr>
<tr>
<td>100.786</td>
<td>General Seminar: Early Modern Europe</td>
<td>Staff</td>
<td>3.00</td>
<td>T 3-5:30PM</td>
</tr>
<tr>
<td>100.788</td>
<td>General Seminar: Modern Europe</td>
<td>Staff</td>
<td>3.00</td>
<td>M 4-6:00PM</td>
</tr>
<tr>
<td>100.790</td>
<td>General Seminar: America</td>
<td>Staff</td>
<td>3.00</td>
<td>W 4-5:50PM</td>
</tr>
<tr>
<td>100.792</td>
<td>General Seminar: Latin America</td>
<td>Staff</td>
<td>3.00</td>
<td>T 5-7:00PM</td>
</tr>
<tr>
<td>100.794</td>
<td>General Seminar: Africa</td>
<td>Staff</td>
<td>3.00</td>
<td>W 4-6:00PM</td>
</tr>
<tr>
<td>100.802</td>
<td>Dissertation Research</td>
<td>Staff</td>
<td>3.00</td>
<td>T 9-11:00</td>
</tr>
<tr>
<td>100.804</td>
<td>Independent Study</td>
<td>Staff</td>
<td>3.00</td>
<td>T 9-11:00</td>
</tr>
<tr>
<td>100.822</td>
<td>Spring Practicum</td>
<td>Staff</td>
<td>3.00</td>
<td>T 9-11:00</td>
</tr>
</tbody>
</table>

## HISTORY OF ART

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>010.102</td>
<td>Introduction to the History of European Art-Part II (4)</td>
<td>Gregg</td>
<td>4.00</td>
<td>M 1:30-3:30</td>
</tr>
<tr>
<td>010.171</td>
<td>American Art, 1600-Present (3)</td>
<td>Maynard</td>
<td>3.00</td>
<td>W 1-3:30</td>
</tr>
<tr>
<td>010.220</td>
<td>Artists and Warfare in the Renaissance: A Meeting of Art and Science (3)</td>
<td>Gregg</td>
<td>3.00</td>
<td>M 1-3:30</td>
</tr>
<tr>
<td>010.315</td>
<td>Architecture on the United States (3)</td>
<td>Maynard</td>
<td>3.00</td>
<td>T 3-5:30PM</td>
</tr>
<tr>
<td>010.317</td>
<td>The Face of God (and Other Body Parts) (3)</td>
<td>Kessler</td>
<td>3.00</td>
<td>W 1-3:30</td>
</tr>
<tr>
<td>010.323</td>
<td>Abstract Expressionism, de Kooning, Pollock, Rothko, Newman (3)</td>
<td>Tuma</td>
<td>3.00</td>
<td>W 1-3:00</td>
</tr>
<tr>
<td>010.333</td>
<td>The Making of Renaissance Rome (3)</td>
<td>Campbel</td>
<td>3.00</td>
<td>T 1-3:30</td>
</tr>
<tr>
<td>010.342</td>
<td>Preaching the Avant-Grade: Mendicant Art in Renaissance Italy (3)</td>
<td>Vusich</td>
<td>3.00</td>
<td>M 10:30-11:45</td>
</tr>
</tbody>
</table>

Lec. = Lecture; Sec. = Section; T = Tuesday; W = Wednesday; M = Monday; Th = Thursday; F = Friday; PM = Afternoon; AM = Morning; Number of sections varies. The course explores the development of American art from the Civil War era to today, from nineteenth-century artists such as Eakins and Homer to twentieth-century innovators Pollock and Warhol.
## HISTORY OF ART

### Dean's Teaching Fellowship Course

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<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Instructor</th>
<th>Units</th>
<th>Description</th>
<th>Time</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>010.365 (H)</td>
<td>ART OF THE ANCIENT ANDES (3)</td>
<td>DeLeonardis</td>
<td>25</td>
<td>Surveys art and architecture of pre-Hispanic Andean South America. Cross-listed with Latin American Studies</td>
<td>TTh 10:30-11:45</td>
<td>25</td>
</tr>
<tr>
<td>010.374 (H)</td>
<td>PRIMITIVISM AND ITS DISCONTENTS (3)</td>
<td>Other</td>
<td>15</td>
<td>This course examines the appropriation and counter-appropriation of non-Western visual culture since the late-nineteenth century. How have Western and non-Western artists respectively constructed the “primitive” as an oppositional strategy?</td>
<td>Th 5-5:30pm</td>
<td>15</td>
</tr>
<tr>
<td>010.412 (H)</td>
<td>THE ART OF DESCRIBING (3)</td>
<td>Tuma</td>
<td>8</td>
<td>Seniors only</td>
<td>M 1:30-4</td>
<td>8</td>
</tr>
<tr>
<td>010.502</td>
<td>INDEPENDENT STUDY</td>
<td>Staff</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>010.522</td>
<td>HONORS THESIS</td>
<td>Tuma</td>
<td></td>
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</tr>
<tr>
<td>010.616</td>
<td>MONUMENTAL NARRATIVE</td>
<td>Kessler</td>
<td></td>
<td>Investigates the depictions of Old and New Testament themes on the walls of early medieval buildings. The programs and sources of early Christian cycles, the adjustments made to address the public, and such technical issues as the role of model books are studied.</td>
<td>T 3-5pm</td>
<td></td>
</tr>
<tr>
<td>010.648</td>
<td>MATTER OF FAITH: RELICS, RELIOQUIARIES, AND THE CULT OF SAINTS IN THE MIDDLE AGES</td>
<td>Mann/Bagnoli</td>
<td>25</td>
<td>Explores the genetic development, and eventual crisis of the Christian cult of relics from Late Antiquity to the end of the Reformation. Course held at the Walters Art Museum.</td>
<td>T 4:30-6:30pm</td>
<td>25</td>
</tr>
<tr>
<td>010.650</td>
<td>REFORM ART IN ITALY</td>
<td>Campbell</td>
<td></td>
<td>This course is a consideration of initiatives to reform religious art in Italy before and after the Council of Trent.</td>
<td>W 4-6pm</td>
<td></td>
</tr>
<tr>
<td>040.621</td>
<td>PROSEMINAR TO CLASSICAL ARCHAEOLOGY</td>
<td>Shapiro</td>
<td>15</td>
<td>Cross-listed with Classics</td>
<td>W 2-4:20</td>
<td></td>
</tr>
<tr>
<td>010.802</td>
<td>SPECIAL RESEARCH AND PROBLEMS</td>
<td>Staff</td>
<td></td>
<td>This course is for students who wish or need special instruction in areas of art history not included in the currently offered courses.</td>
<td></td>
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</tr>
<tr>
<td>010.804</td>
<td>INDIVIDUAL WORK</td>
<td>Kessler/Staff</td>
<td></td>
<td>Students preparing dissertations will enroll in this course with the permission of their doctoral advisers.</td>
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</tbody>
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## HISTORY OF SCIENCE AND TECHNOLOGY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Instructor</th>
<th>Units</th>
<th>Description</th>
<th>Time</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>140.106 (H,S)</td>
<td>HISTORY OF MODERN MEDICINE (3)</td>
<td>Marks</td>
<td>20 per section</td>
<td>This course examines medical and bodily practices in their social and historical settings, in Europe and America, from the 18th century to the present. Note: Graduate students should register for ME 150.702, School of Medicine. Cross-listed with Public Health Studies</td>
<td>Lec. MW 10-10:50</td>
<td>20</td>
</tr>
<tr>
<td>140.112 (H,S)</td>
<td>FRESHMEN SEMINAR: THE NATURAL AND THE ARTIFICIAL: THE CONCEPT OF THE MAN-MADE HUMAN</td>
<td>Kargon</td>
<td>15</td>
<td>Freshmen only</td>
<td>W 1:30-4</td>
<td></td>
</tr>
<tr>
<td>140.302 (H,S)</td>
<td>RISE OF MODERN SCIENCE (3)</td>
<td>Kingsland</td>
<td>20 per section</td>
<td>Considers some of the most important scientific developments that have shaped the modern world from 18th century to late 20th century.</td>
<td>Lec. WF 10-10:50</td>
<td>20</td>
</tr>
<tr>
<td>140.358 (H,S)</td>
<td>INTRODUCTION TO ENVIRONMENTAL HISTORY (3)</td>
<td>Shuman</td>
<td>20</td>
<td>Course traces the influence of plants, animals, microorganisms, climate, and geography in shaping human history, as well as the human influence on the natural world. With a focus on North America since the period of European settlement, major topics include the Columbian Exchange, the market revolution in agriculture, American epidemics, industrialization, the origins of conservation, the environmental</td>
<td>Lec. TTh 10:30-11:45</td>
<td>20</td>
</tr>
</tbody>
</table>
### HISTORY OF SCIENCE AND TECHNOLOGY

HISTORY OF SCIENCE AND TECHNOLOGY is a field that explores the development of scientific and technological knowledge, including the movement, energy use, and the globalization of America's environmental footprint.

#### Course Descriptions

**140.364 (H,S)**  
**HOW ELECTRICITY CHANGED THE WORLD: A CULTURAL HISTORY**  
(Semester 3)  
Limit 20  
Traces emergence of electrical sciences and industries to understand how society and culture has been affected by electricity up to the early 20th century. Course also considers global expansion of electrical networks through capitalism, industrialization, and colonialism.

**140.372 (H,S)**  
**SCIENCE ON DISPLAY**  
(With Leslie)  
Limit 25  
History of collecting, exhibiting and interpreting science and technology, from Renaissance cabinets of curiosity to modern world’s fairs, zoos, aquariums, films and science centers. Students will present their own exhibits as dioramas, web sites, documentaries or other formats.

**140.374 (H,S)**  
**SANITIZING CULTURE: HYGIENE & SANITIZATION IN 20TH CENTURY EAST ASIA**  
(Semester 3)  
Limit 20  
Impact of public culture of hygiene and sanitation on East Asia, esp. in terms of how ethnicity, race, nationality and gender were defined and redefined. Examines how regulation of health and bodies was a civilizing process central to colonial discourse and the spread of imperialism. Cross-listed with Public Health Studies.

**140.412 (H,S)**  
**SENIOR RESEARCH SEMINAR**  
(With Leslie)  
Limit 10  
For departmental majors writing a senior thesis only.

**140.436 (H,S)**  
**COLONIAL KNOWLEDGE**  
(With Fissell/Packard)  
Limit 8  
The seminar will examine various forms of knowledge production and use within European colonial settings in different parts of the globe.

**140.502**  
**INDEPENDENT STUDY**

**140.638**  
**SPACES OF INQUIRY: THE CLINIC, THE STUDIO, AND THE LABORATORY**  
(With Kargon/LeSie)  
Limit 15  
An exploration of three key sites of knowledge production in three eras, Philadelphia from 1880-1900, Detroit from 1920-1930 and New York from 1950-1960, focusing on the relationship of science, medicine, and the arts. Open to undergraduates by permission.

**140.642**  
**COLLOQUIUM**  
(Kingsland/Mooney)  
Limit 10  
An exploration of three key sites of knowledge production in three eras, Philadelphia from 1880-1900, Detroit from 1920-1930 and New York from 1950-1960, focusing on the relationship of science, medicine, and the arts. Open to undergraduates by permission.

**140.708**  
**RISE OF MODERN SCIENCE**  
(Kingsland)  
Limit 20  
Seminar on major scientific developments from 18th-20th century. Weekly readings and discussion; students may attend lectures for 140.302.

**140.802**  
**DIRECTED READINGS & DISSERTATION**  
(Kargon)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.812**  
**DIRECTED READINGS & DISSERTATION**  
(Kargon)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.832**  
**DIRECTED READINGS & DISSERTATION**  
(Kargon)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.854**  
**DIRECTED READINGS & DISSERTATION**  
(Packard)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.864**  
**DIRECTED READINGS & DISSERTATION**  
(Pomata)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.872**  
**DIRECTED READINGS & DISSERTATION**  
(Comfort)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.874**  
**DIRECTED READINGS & DISSERTATION**  
(Mooney)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.876**  
**DIRECTED READINGS & DISSERTATION**  
(Principe)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.884**  
**DIRECTED READINGS & DISSERTATION**  
(Kargon)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.892**  
**DIRECTED READINGS & DISSERTATION**  
(Mooney)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.894**  
**DIRECTED READINGS & DISSERTATION**  
(Packard)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.

**140.896**  
**DIRECTED READINGS & DISSERTATION**  
(Mooney)  
Limit 10  
Weekly readings and discussion; students may attend lectures for 140.302.
HUMANITIES CENTER

500.310 HUMANITIES CENTER
POETRY REALIZED IN NATURE: THE ROMANTIC IMAGINATION (3) Dechand Limit 20
Examines human creativity and poetics. Examines Coleridge's poetry and its reception in Romantic literature. Limited to 20 students.

500.312 HUMANITIES CENTER
IMAGINING REVOLUTION AND UTOPIA (3) Moss Limit 20
Examines theories of revolution and utopias in literature, art, and film. Emphasis on Russia and the Soviet Union. Cross-listed with Studies of Women and Gender, and Sexuality, and Film & Media Studies.

500.340 HUMANITIES CENTER
ANIMAL SPIRITS: OUR RELATIONS WITH FELLOW CREATURES (3) Macksey Limit 15
Seminar meets at instructor’s home.

500.350 HUMANITIES CENTER
MORAL PERFECTIONISM (3) Marrari Limit 20
Readings include Cavel, Emerson, Mill, Nietzsche, and others.

500.368 HUMANITIES CENTER
DO MIRACLES (STILL) HAPPEN? (3) de Vries The seminar will seek to establish a conversation between theologies of the miracle and philosophies of causation and the event. Readings will include St. Paul, St. Augustine, St. Thomas Aquinas, Spinoza, Hume, Feuerbach, Rosenzweig, Wengers. Frequent gallery trips and visits from guest artists are an integral part of the seminar experience.

500.376 HUMANITIES CENTER
EUROPEANS CONCEPTION OF THE NEW MAN, 1789-1945 (3) Geroulanos Limit 35
A course on the cultural and conceptual history of the political, intellectual, and artistic figure of the “New Man” in philosophical writings and political movements from the French Revolution through Nazism and Stalinism.

571.140 HUMANITIES CENTER
CARTOONING (3) Chalkley Limit 15
Not open to freshmen.

571.146 HUMANITIES CENTER
BASIC BLACK & WHITE PHOTOGRAPHY (3) Berger Students must have a 35mm camera with manual aperture and shutter speeds. Attendance at first class is mandatory.

571.151 HUMANITIES CENTER
PHOTOSHOP AND THE DIGITAL DARKROOM (3) Berger Limit 10
Students must have a digital camera. Prior knowledge of Photoshop is not required.

571.152 HUMANITIES CENTER
INTRODUCTION TO DIGITAL PHOTOGRAPHY (3) Salazar Students must have a digital camera with manual aperture and shutter speed. Attendance at first class is mandatory.

571.300 HUMANITIES CENTER
BLACK & WHITE PHOTOGRAPHY SEMINAR (3) Berger Limit 14
Students develop a project of their choice, working independently in the darkroom and meeting for weekly critiques and discussions. Frequent gallery trips and visits from guest artists are an integral part of the seminar experience.

213.332 HUMANITIES CENTER
ZIONISM IN MODERN LITERATURE: JEWISH OR ISRAELI? (3) M. Caplan Cross-listed with Jewish Studies, German and Romance Languages, and

Sec. 01 TTh 2:30-3:20
Sec. 01 T 1:30-4
Sec. 01 F 2:4-3:30
Sec. 01 T 1:30-4
Sec. 01 Th 1:30-4
Sec. 01 W 5-8pm
Sec. 01 M 1:30-4:20
Sec. 01 F 2-5pm
Sec. 01 T 1:30-4:30
Sec. 01 W 10-1
Sec. 01 Th 10-1
Sec. 01 T 1:30-4:30
Sec. 01 W 10-1
Sec. 01 W 1:30-4:30
Sec. 01 TTh 10:30-11:45
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Days</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>213.352</td>
<td>English FÜNTANE AND THE ADULTERY FILM (3) Kolaves. Limit 20</td>
<td>Sec. 01</td>
<td>F 2-4:30</td>
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<tr>
<td>214.371</td>
<td>IMAGINING MEDIEVAL ITALIAN CULTURE: THE NAME OF THE ROSE (3) Stephens</td>
<td>Sec. 01</td>
<td>T 2-4:30</td>
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<tr>
<td>215.380</td>
<td>GHOST STORIES, HAUNTED HOUSES AND OTHER OCCULT PHENOMENA (3) Tobias</td>
<td>Sec. 01</td>
<td>MWF 10-10:50</td>
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<tr>
<td>214.419</td>
<td>CRITICAL LOVE: THE THEORY AND PRACTICE OF LITERARY CRITICISM (3) Pahl</td>
<td>Sec. 01</td>
<td>W 2-4:30</td>
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<tr>
<td>215.456</td>
<td>LITERATURE AND FILM: THE CASE OF MANUEL PUIG (3) E. Gonzalez</td>
<td>Sec. 01</td>
<td>Th 2-4:30</td>
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<tr>
<td>300.504</td>
<td>INDIVIDUAL HONORS WORK – JUNIORS Mackay and Sponsoring faculty (3)</td>
<td>Sec. 01</td>
<td>Sunday 3-5</td>
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<tr>
<td>300.506</td>
<td>INDIVIDUAL HONORS WORK - SENIORS Mackay and Sponsoring faculty Open only to Seniors admitted to the Honors Program in Humanistic Studies</td>
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<tr>
<td>300.508</td>
<td>HONORS SEMINAR: METHODS IN HUMANISTIC STUDIES Mackay/Deckard A workshop on Honors projects in progress and their relation to methods in humanistic scholarship. Readings will focus on Aristotle’s modes of inquiry. Open only to members of the Honors Program in Humanistic Studies. Note: Seminar meets at instructor’s home</td>
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<tr>
<td>300.526</td>
<td>EDITORIAL INTERNSHIP Mackay S/U only Students with a serious commitment to critical journalism may contract a supervised internship with one of the University publications or cooperating sponsors in the Baltimore community. Admission by interview</td>
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<tr>
<td>300.610</td>
<td>ANIMAL SPIRITS: OUR RELATIONS NARRATIVE TEMPORALITY Mackay Strategies of chronology, narrated time, and reading time in modern and post-modern fiction, with theoretical observations from the Russian Formalists, Weimich, Poulet, Ricoeur, Genette, Derrida, et al. Cross listed with Writing Seminars Note: Seminar meets at instructor’s home</td>
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<tr>
<td>300.624</td>
<td>THE SECULAR LIVES OF GRACE de Fries This seminar will offer an extensive discussion of recent texts on the so-called deconstruction of Christianity by Jean-Luc Nancy and Ernesto Laclau, Marcel Gauchet and Charles Taylor, Giorgio Agamben and others Cross listed with Philosophy, German and Romance Languages and Literatures, Anthropology, and Political Science</td>
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<tr>
<td>300.680</td>
<td>DIFFERENCE AND REPETITION CONTINUED Marvati</td>
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<tr>
<td>213.640</td>
<td>THE CONCEPT OF PHILOSOPHICAL AESTHETICS Monte. Limit 15 Meets 2/11-3/7 Cross-listed German and Romance Languages and Philosophy</td>
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<tr>
<td>213.646</td>
<td>FANTASY NARRATIVES OF THE 19TH CENTURY M. Captan Limit 15 Cross-listed with German and Romance Languages and Philosophy</td>
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<tr>
<td>215.686</td>
<td>ALL ABOUT ŽEĶEK Egginton Limit 15 Cross-listed with German and Romance Languages and Philosophy</td>
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<tr>
<td>214.748</td>
<td>VICO AND THE OLD SCIENCE Stephens - Limit 15 Cross-listed with German and Romance Languages, the English, and Philosophy</td>
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<tr>
<td>300.800</td>
<td>INDEPENDENT STUDY</td>
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<tr>
<td>300.802</td>
<td>INDEPENDENT STUDY - FIELD EXAM</td>
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<tr>
<td>300.806</td>
<td>LITERARY PEDAGOGICS Mackay</td>
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</tbody>
</table>
INTERDEPARTMENTAL

360.238 (H,S) QUEER COMFORTS: HAVING, NEEDING, AND WANTING IN THEORY AND LITERATURE (3) Mick  Limit 18  When is enough enough? Through a range of literary and theoretical texts, this seminar examines how the experience of queer desire produces unconventional accounts of value, expectation, adequacy, and sustainability. Cross-listed with Women, Gender and Sexuality
Sec. 01  W 1:30-4

360.258 (S) GENDER AND HEALTH: A LIFE COURSE PERSPECTIVE (3) Goodfellow Limit 18  Cross-listed with Studies of Women, Gender, and Sexuality
Sec. 01  TTh 10:30-11:45

360.404 (E) INTERFACIAL PHENOMENA IN NANOSTRUCTURED MATERIALS Erlebacher/Frechette Limit 25  All materials properties of materials change when encountered or fabricated with nanoscale structure. In this class, we will examine how the properties of nanostructured materials differ from their macroscopic behavior, primarily due to the presence of large interfacial areas relative to the characteristic volume scale. General topics include the structure of nanostructured materials (characterization and microscopy), thermodynamics (effects of high curvatures and surface elasticity), kinetics and phase transformations (diffusion and morphological stability), and electronic properties (quantum confinement and effects of dimensionality). Cross-listed with Chemical and Biomolecular Engineering and Materials Science  Same course as 360.644
Sec. 01  TTh 1:30-2:45

360.528 APPLIED ECONOMICS RESEARCH (3) Hanke  Prereq: 180.101-102  Perm. Req’d  Satisfactory/Unsatisfactory only  Cross-listed with DOGEE and Economics
Sec. 01  TBA

360.534 DIRECTED READINGS - WGS Cross-listed with Studies of Women, Gender, and Sexuality
Sec. 01  TBA

360.621 NANOBI LABORATORY Wirtz/Searson Limit 30  Perm. Req’d  This course introduces students to concepts and laboratory techniques in nanobiotechnology. The focus of the laboratory is on nanoscale carriers for drug delivery and markers for imaging. The laboratory involves the synthesis of nanoparticles using solution-phase techniques and characterization by optical techniques such as dynamic light scattering and absorbance spectroscopy. Strategies for functionalization of nanoparticles are covered with focus on methods for attaching biomolecules. The basic aspects of cell culture and optical microscopy techniques will be covered. Nanoparticles functionalized with a drug or gene will be used to perform transfection experiments and compared to standard techniques. Cross-listed with Interdepartmental
Sec. 01  TBA

360.644 INTERFACIAL PHENOMENA IN NANOSTRUCTURED MATERIALS Erlebacher/Frechette Limit 25  Same as 360.404  Cross-listed with Materials Science and Chemical & Biomolecular Engineering
Sec. 01  TTh 1:30-2:45

360.781 PREPARATION FOR UNIVERSITY TEACHING Shingles  Limit 10  Full-time A&S Graduate Students only  This course will prepare graduate students to teach at the university level. Topics covered include large and small class teaching, characteristics of student learning, syllabus construction, grading students, and developing a teaching portfolio. Co-listed as 500.781
Sec. 01  T 1:30-2:45

JEWISH STUDIES
Please refer to the departmental listings for complete information regarding these courses.

HISTORY

100.436 (H,S) AND THE STREETS WERE PAVED IN GOLD? JEWS IN LATIN AMERICA, 1492 Sec. 01  TTh 10:30-11:45
### JEWISH STUDIES
Please refer to the departmental listings for complete information regarding these courses.

**TO PRESENT (3) Cribelli Limit 20**

**Jewish Studies Teaching Fellowship Course**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Limit</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.346</td>
<td>INTRODUCTION TO THE HISTORY OF RABBINIC LITERATURE (3)</td>
<td>Katz</td>
<td>Limit 20</td>
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</tr>
<tr>
<td>130.352</td>
<td>HISTORY OF HASIDISM (3)</td>
<td>Katz</td>
<td>Limit 20</td>
<td></td>
</tr>
<tr>
<td>130.441</td>
<td>ELEMENTARY BIBLICAL HEBREW (3)</td>
<td>Kang</td>
<td></td>
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<tr>
<td>130.451</td>
<td>ELEMENTARY MODERN HEBREW (3)</td>
<td>Braun</td>
<td>Limit 12</td>
<td>Prereq: 130.450 or 130.451</td>
</tr>
<tr>
<td>130.455</td>
<td>INTERMEDIATE MODERN HEBREW (3)</td>
<td>Braun</td>
<td>Limit 10</td>
<td>Prereq: 130.453 or 130.454 also a solid foundation in reading, writing, and grammar.</td>
</tr>
<tr>
<td>134.650</td>
<td>SEMINAR IN HEBREW</td>
<td>Lewis</td>
<td>Limit 10</td>
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</tbody>
</table>

### NEAR EASTERN STUDIES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Limit</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.452</td>
<td>HISTORY OF HASIDISM (3)</td>
<td>Katz</td>
<td>Limit 20</td>
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</tr>
<tr>
<td>130.453</td>
<td>HISTORY OF HASIDISM (3)</td>
<td>Katz</td>
<td>Limit 20</td>
<td></td>
</tr>
<tr>
<td>130.454</td>
<td>ELEMENTARY MODERN HEBREW (3)</td>
<td>Kong</td>
<td></td>
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</tr>
<tr>
<td>130.455</td>
<td>ELEMENTARY MODERN HEBREW (3)</td>
<td>Braun</td>
<td>Limit 12</td>
<td>Prereq: 130.450 or 130.451</td>
</tr>
<tr>
<td>130.456</td>
<td>INTERMEDIATE MODERN HEBREW (3)</td>
<td>Braun</td>
<td>Limit 10</td>
<td>Prereq: 130.453 or 130.454 also a solid foundation in reading, writing, and grammar.</td>
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</tbody>
</table>

### GERMAN AND ROMANCE LANGUAGES AND LITERATURES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Limit</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>210.264</td>
<td>INTERMEDIATE YIDDISH I (3)</td>
<td>B. Caplan</td>
<td>Limit 15</td>
<td>Prereq: 210.263 or Perm. Req’d.</td>
</tr>
<tr>
<td>210.316</td>
<td>CONVERSATIONAL SPANISH (3)</td>
<td>Sanchez</td>
<td>Limit 15</td>
<td>Prereq: 210.311 or appropriate S-Cape score</td>
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</table>

### LANGUAGE TEACHING CENTER

#### ARABIC

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Limit</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>375.116</td>
<td>BEGINNING ARABIC II (4.5)</td>
<td>Tahrawi/Abdallah</td>
<td>Limit 18 per section</td>
<td>May not be taken Satisfactory/ Unsatisfactory</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Continuation of 375.115. Introductory course in speaking, listening, reading, and writing Modern Standard Arabic. Presents basic grammatical structures and a basic vocabulary. Through oral-aural drill in classroom, tapes in Language Laboratory, and reading/writing exercises, students attain a basic level of competence on which they can build in subsequent years of study.</td>
</tr>
<tr>
<td>375.216</td>
<td>INTERMEDIATE ARABIC II (4)</td>
<td>Abdallah</td>
<td>Limit 18 per section</td>
<td>Continuation of 375.215. Designed to bring students up to competency level required for third/fourth year Arabic. Students will consolidate and expand their mastery of the four basic skills acquired in 375.113-116. More authentic material—written, audio, and visual—will be used, and culture will be further expanded on as a fifth skill.</td>
</tr>
<tr>
<td>375.302</td>
<td>ADVANCED ARABIC READING AND WRITING (3)</td>
<td>Tahrawi</td>
<td></td>
<td>Prereq: Two years of Arabic or Perm Req’d. Continuation of 375.301. Designed to enhance students’ ability to read, discuss, and write about various topics covered in traditional and contemporary Arabic texts.</td>
</tr>
<tr>
<td>375.402</td>
<td>UPPER ADVANCED ARABIC (3)</td>
<td>Tahrawi</td>
<td>Limit 15</td>
<td>Prereq: 375.302 or equivalent Continuation of 375.401. This is an introductory course to different periods of the Arabic literature. Selections of famous Arabic poetry and short prose works are the substance of the course.</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Instructor</td>
<td>Limits</td>
<td>Prerequisites/Requirements</td>
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<tr>
<td>373.112</td>
<td>Accelerated Beginning Chinese (3.5)</td>
<td>Hsieh</td>
<td>17</td>
<td>373.111 or Perm Req'd, Lab Req'd, Continuation of 373.111</td>
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<tr>
<td>373.116</td>
<td>Elementary Chinese (4.5)</td>
<td>Lievens</td>
<td>17</td>
<td>373.115 or Perm Req'd</td>
</tr>
<tr>
<td>373.212</td>
<td>Accelerated Intermediate Chinese (3.5)</td>
<td>Feng</td>
<td>17</td>
<td>373.211 or Perm Req'd</td>
</tr>
<tr>
<td>373.216</td>
<td>Intermediate Chinese II (4.5)</td>
<td>Matthews</td>
<td>17</td>
<td>Perm Req'd</td>
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<tr>
<td>373.303</td>
<td>Chinese Calligraphy (3)</td>
<td>Hsieh</td>
<td>25</td>
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<tr>
<td>373.312</td>
<td>Modern Chinese Literature in Translation (3)</td>
<td>Matthews</td>
<td>17</td>
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<tr>
<td>373.316</td>
<td>Upper Intermediate Chinese II (3.5)</td>
<td>Hsieh/Feng</td>
<td>17</td>
<td>373.315 or Perm Req'd</td>
</tr>
<tr>
<td>373.416</td>
<td>Advanced Chinese (3)</td>
<td>Feng</td>
<td>17</td>
<td>373.415</td>
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<tr>
<td>373.421</td>
<td>Classical Chinese (3)</td>
<td>Lievens</td>
<td>17</td>
<td>373.421 or Perm Req'd, Lab Req'd</td>
</tr>
</tbody>
</table>
### LANGUAGE TEACHING CENTER

Language courses at JHU or equivalent language skills. Classical Chinese will introduce key features of grammar, syntax, and usage, along with the intensive study of a set of readings in the language. Readings are drawn from a variety of philosophical and historical texts. Cross-listed with East Asian Studies.

### ENGLISH AS A SECOND LANGUAGE

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Time</th>
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<tbody>
<tr>
<td>370.601</td>
<td>COMMUNICATION STRATEGIES IN THE AMERICAN CLASSROOM</td>
<td>Shiffman</td>
<td>3</td>
<td>Sec. 01: MW 12-1:15, Sec. 02: MW 3-4:15</td>
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Open to graduate students. No auditors. Perm Req'd. Prospective international teaching assistants work to improve their English language skills while familiarizing themselves with the culture of the American classroom and effective teaching strategies. Students are videotaped practice teaching.

### HINDI

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Time</th>
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<tbody>
<tr>
<td>381.102</td>
<td>BEGINNING HINDI II (3)</td>
<td>Saini</td>
<td>3</td>
<td>Sec. 01: MW 3-4:15</td>
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<td></td>
<td>INTERMEDIATE HINDI II (3)</td>
<td>Staff</td>
<td>3</td>
<td>Sec. 01: TTh 3-4:15</td>
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<tr>
<td></td>
<td>HINDI/URDU CONVERSATION (3)</td>
<td>Staff</td>
<td>3</td>
<td>Sec. 01: TTh 4:30-5:45</td>
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</table>

Cross-listed with East Asian Studies

### JAPANESE

<table>
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<tr>
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<tbody>
<tr>
<td>378.102</td>
<td>SLOW PACED BEGINNING JAPANESE II (3)</td>
<td>Katagiri</td>
<td>3.5</td>
<td>Sec. 01: MWF 9-9:50</td>
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<tr>
<td>378.104</td>
<td>SLOW PACED BEGINNING JAPANESE IV (3)</td>
<td>Seya</td>
<td>3.5</td>
<td>Sec. 01: WF 12-1:15</td>
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<tr>
<td>378.116</td>
<td>BEGINNING JAPANESE (4.5)</td>
<td>Nakao/Katagiri</td>
<td>4.5</td>
<td>Sec. 01: MTWThF 11-11:50, Sec. 02: MTWThF 12-12:50, Sec. 03: MTWThF 1:30-2:30</td>
</tr>
</tbody>
</table>

Cross-listed with East Asian Studies

### INTEGRALE JAPANESE (4.5)

- Prereq: 378.216 or equivalent
- Lab required
- Limit 15 per section
- Continuation of Beginning Japanese and Intermediate Japanese I
- Training in spoken and written language, increasing their knowledge of more complex patterns. At completion, students will have a working knowledge of about 250 Kanji. Cross-listed with East Asian Studies
<table>
<thead>
<tr>
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<th>TIMES</th>
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<td><strong>JAPANESE CONVERSATION II</strong></td>
<td>378.312</td>
<td>MW</td>
<td>1:30-2:20</td>
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<tr>
<td><strong>JAPANESE (3.5)</strong></td>
<td>378.316</td>
<td>MWF</td>
<td>10-10:50</td>
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<tr>
<td><strong>ADVANCED JAPANESE (3.5)</strong></td>
<td>378.416</td>
<td>TTh</td>
<td>9-10:15</td>
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<tr>
<td><strong>BEGINNING KISWAHILI II</strong></td>
<td>379.152</td>
<td>TTh</td>
<td>9-10:15</td>
</tr>
<tr>
<td><strong>INTERMEDIATE KISWAHILI II</strong></td>
<td>379.252</td>
<td>TTh</td>
<td>4:30-5:45pm</td>
</tr>
<tr>
<td><strong>ELEMENTS OF KOREAN II</strong></td>
<td>380.102</td>
<td>TTh</td>
<td>9-10:15</td>
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<tr>
<td><strong>INTERMEDIATE KOREAN FOR READING AND WRITING II</strong></td>
<td>380.202</td>
<td>TTh</td>
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<tr>
<td><strong>ADVANCED KOREAN II</strong></td>
<td>380.302</td>
<td>TTh</td>
<td>1:30-2:45</td>
</tr>
<tr>
<td><strong>BEGINNING PERSIAN II</strong></td>
<td>382.102</td>
<td>MW</td>
<td>3-4:15</td>
</tr>
</tbody>
</table>
LANGUAGE TEACHING CENTER
RUSSIAN

377.132  ELEMENTARY RUSSIAN II (4)  Sec. 01  MTWF 11-11:50
Samilenko/Czeczulin  Limit 17  MTWF 9:30-10:20
Section 02 taught at Goucher
May not be taken Satisfactory/Unsatisfactory
Prereq: 377.131  Sec. 02  MTWF 11-11:50
Continuation of 377.131. Designed to give student a firm
foundation in the language, with special
emphasis on the development of
vocabulary, basic reading, and
conversational skills.

377.209 (H)  INTENSIVE INTERMEDIATE RUSSIAN II (4)  Sec. 01  MTWF 11-11:50
Czeczulin  Limit 17  Continuation of 377.208. Intensive oral
work, continued emphasis on grammar and
reading comprehension.

377.253 (H)  THE SOUL OF RUSSIA: RUSSIAN CULTURE AND CIVILIZATION (3)  Sec. 01  MWF 12:30-1:20
Czeczulin  Limit 17  Taught at Goucher
The evolution of Russian culture and
subjects from Kievan Rus’ to the
present day. Conducted through a study of
literary texts, architecture, art, music,
film, and multimedia. This course is
conducted in English with an optional 1-2
credit Russian language component.

377.318 (H)  CHEKHOV (3)  Sec. 01  MWF 10-10:50
Samilenko  Limit 17  Taught in Russian
Chekhov’s short stories and plays studied against the
social, political, and philosophic
background of his time. Close readings
and in-depth stylistic analysis. Designed
for advanced students.

377.396 (H)  SENIOR RUSSIAN SEMINAR II: LITERATURE OF THE REVOLUTION AND PURGE (3)  Sec. 01  MW 12-1:15
Samilenko  Limit 17  Perm Req’d
Rotating topics in 20th century prose,
poetry, drama, or film. This course
focuses on political, social, and
developmental factors in the development of
Russian literature of the 20th century. A
study of leading Russian authors and the
conflicts between artistic freedom and
political conformity. Taught in Russian.

377.506  RUSSIAN-INDEPENDENT STUDY  Sec. 01  MW 6-7:15 pm
Samilenko

SANSKRIT

383.112  BEGINNING SANSKRIT II (3)  Sec. 01  MW 6-7:15 pm
Saini  Limit 18  Continuation of 383.111
A beginning level course with emphasis
placed on the basic listening, reading, and
writing of the language. The reading and
writing system will be introduced in a
very systematic manner. Through students
will not have to learn all the vowels and
the consonants at once before getting to
read the words. Basic sentences will be
drawn from the Sanskrit Literature.
Simpile Vedic Mantras from the Vedas
and Bhagavad-Gita will be read.

PROGRAM IN LATIN AMERICAN STUDIES

361.124 (H)  LATIN AMERICAN FILM: MINI-COURSE (1)  Sec. 01  W 4:30-7 pm
Poole  Limit 50  W 4:30-7 pm
This course provides a brief, four week, one-
credit introduction to the cultural, political
and aesthetic domains of Latin American
cinema through thematically focused
discussions of four feature-length films.
Dates: 3/5, 3/12, 3/26, 4/2

361.131 (H)  INTRODUCTION TO LATIN AMERICAN STUDIES II (3)  Sec. 01  T 1:30-4
Femenias  Limit 50  T 1:30-4
The objective is to introduce
students to Latin America using 6 major
themes including Amerindian civilizations as
well as Colonial legal, social and cultural
legacies. Class is conducted in English.

361.204 (H)  DISCUSSING VIOLENCE AND GUERILLA MOVEMENTS IN LATIN AMERICA: ASSESSMENT AND LESSONS FROM PAST EXPERIENCES (3)  Sec. 01  TTh 10:30-11:45
Acha  Limit 30  TTh 10:30-11:45
The aim of the course is to
provide students with analytical and
methodological tools to examine violence
and political conflicts in Latin America,
tracing differences between the Andean
Region, Southern Cone and Central America.
It also discusses issues of representation in
written texts, documentaries and films.
## PROGRAM IN LATIN AMERICAN STUDIES

### 361.354 (LS) TRUTH, JUSTICE, AND RECONCILIATION IN LATIN AMERICA (3)
- Instructor: Rojas-Perez
- This course uses the cases of Peru, Chile and Guatemala to examine critically the origins, experience and impact of truth commissions for achieving reconciliation and peace in Latin American post-war settings.

### 361.360 (WS) CULTURAL PUBLICS AND SOCIAL MOVEMENTS IN LATIN AMERICA (3)
- Instructor: Femenias
- This course explores how Latin American and US-Latino social movements create and maintain a culturally sensitive public presence in national democratic arenas through performative practices including festivals, demonstrations and commemorations.

### 230.307 (S) SOCIOLOGY OF LATIN AMERICA (3)
- Instructor: Von der Heydt

### 211.394 (HS) BRAZILIAN CULTURE AND CIVILIZATION (3)
- Instructor: DeLeonardis

### 210.365 (HS) THE ART OF THE ANCIENT ANDES (3)
- Instructor: Poole

### 215.456 (HS) LITERATURE AND FILM: THE CASE OF MANUEL PUIG (3)
- Instructor: E. Gonzalez

### 361.502 INDEPENDENT STUDY

## MATHEMATICS

### 110.106 (Q) CALCULUS I (4)
- Instructor: Khovanski
- This course covers the fundamentals of differential and integral calculus, including limits, derivatives, and integrals, with applications to physics, economics, and other fields.

### 110.107 (Q) CALCULUS II (4)
- Instructor: Chong
- This course continues the study of calculus, focusing on advanced topics such as integration techniques, series, and sequences.
### MATHEMATICS

#### 110.109 (Q) CALCULUS II (4)
**For Physical Sciences and Engineering Majors**
Limit 28 per section
Prereq: Calculus I
Differential and integral calculus. Includes analytic geometry, functions, limits, integrals and derivatives, polar coordinates, parametric equations, Taylor's theorem and applications, infinite sequences and series.

| Lec. | Sec. 01 | MWF 10-10:50
|------|---------|----------------|
| Sec. 02 | T 1:30-2:20
| Sec. 03 | Th 3:30-2:20
| Sec. 04 | Th 4:30-2:20
| Sec. 05 | T 4:30-2:20
| Sec. 06 | Th 4:30-2:20

#### 110.109 (Q) LINEAR ALGEBRA (4)
Limit 25 per section
Prereq: Calculus I

| Lec. I | Sec. 01 | MWF 10-10:50
|------|---------|----------------|
| Sec. 02 | T 1:30-2:20
| Sec. 03 | Th 3:30-2:20
| Sec. 04 | Th 4:30-2:20
| Sec. 05 | T 4:30-2:20
| Sec. 06 | Th 4:30-2:20

#### 110.110 (Q) CALCULUS III (4)
Limit 28 per section
Prereq: 110.107, 110.109 or 110.112
Calculus of functions of more than one variable: partial derivatives, and applications; multiple integrals, line and surface integrals; Green's Theorem, Stokes' Theorem, and Gauss' Divergence Theorem.

| Lec. I | Sec. 01 | MWF 11-11:50
|------|---------|----------------|
| Sec. 02 | T 1:30-2:20
| Sec. 03 | Th 3:30-2:20
| Sec. 04 | Th 4:30-2:20
| Sec. 05 | MWF 12-12:50
| Sec. 06 | Th 4:30-2:20

#### 110.211 (Q) HONORS MULTIVARIABLE CALCULUS (4)
Limit 35
Prereq: B+ or better in Calculus II or 5 in the BC AP exam
This course includes the material in Calculus III (202) with some additional applications and theory. Recommended for mathematically able students majoring in physical science, engineering, or especially mathematics. 110.211-212 used to be an integrated yearlong course, but now the two are independent courses and can be taken in either order.

| Lec. | Sec. 01 | MW 12-1:15
|------|---------|----------------|
| Sec. 02 | F 12-12:50

#### 110.212 (Q) HONORS LINEAR ALGEBRA (4)
Limit 45
Prereq: Calculus II or III or equivalent, preferably honors
This course includes the material in Linear Algebra (201) with some additional applications and theory. Recommended for mathematically able students majoring in physical science, engineering, or mathematics.

| Lec. | Sec. 01 | MW 1:30-2:45
|------|---------|----------------|
| Sec. 02 | F 1:30-2:20

#### 110.302 (E,Q) DIFFERENTIAL EQUATIONS WITH APPLICATIONS (4)
Prereq: Calculus II or III or equivalent, preferably honors
This is an applied course in ordinary differential equations, which is primarily for students in the biological, physical and social sciences, and engineering. The purpose of the course is to familiarize the student with the techniques of solving ordinary differential equations.

| Lec. I | Sec. 01 | MWF 12-12:50
|------|---------|----------------|
| Sec. 02 | T 1:30-2:20
| Sec. 03 | Th 3:30-2:20
| Sec. 04 | Th 4:30-2:20
| Sec. 05 | T 4:30-2:20
| Sec. 06 | Th 3:30-2:20
| Sec. 07 | Th 4:30-2:20

#### 110.402 (Q) ADVANCED ALGEBRA II (4.5)
Limit 30
Prereq: 110.401
Splitting field of a polynomial, algebraic closure of a field. Galois theory: correspondence between subgroups and subfields. Solvability of polynomial equations by radicals.

| Lec. | Sec. 01 | MW 12-1:15
|------|---------|----------------|
| Sec. 02 | F 12-12:50

#### 110.405 (Q) ANALYSIS I (4.5)
Prereq: Calculus III, Linear Algebra Real and complex number systems, topology of metric spaces, limits, continuity, infinite sequences and series, differentiation, Riemann-Stieltjes integration.

| Lec. | Sec. 01 | MW 1:30-2:20
|------|---------|----------------|
| Sec. 02 | F 1:30-2:20

#### 110.406 (Q) CALCULUS ON MANIFOLDS (4.5)
Preprint, Calculus III, Linear Algebra Real and complex number systems, topology of metric spaces, limits, continuity, infinite sequences and series, differentiation, Riemann-Stieltjes integration.

| Lec. | Sec. 01 | TTh 1:30-2:20
|------|---------|----------------|
| Sec. 02 | TTh 10:30-11:20

#### 110.413 (Q) INTRODUCTION TO TOPOLOGY (4.5)
Preprint, Calculus III, Topological spaces, connectedness, compactness, quotient spaces, metric spaces, function spaces. An introduction to algebraic topology: covering spaces, the fundamental group, and other topics as time permits.

| Lec. | Sec. 01 | TTh 1:30-2:20
|------|---------|----------------|
| Sec. 02 | TTh 10:30-11:20

#### 110.416 (Q) HONORS ANALYSIS II (4)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Sections</th>
<th>Times</th>
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<tr>
<td>110.417</td>
<td>PARTIAL DIFFERENTIAL EQUATIONS FOR APPLICATIONS (4;5)</td>
<td>Zou</td>
<td>35</td>
<td>Calculus III, Pre-req Calculus III, Linear Algebra</td>
<td>Sec. 01</td>
<td>TTh 12-1:15</td>
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<tr>
<td>110.421</td>
<td>DYNAMICAL SYSTEMS (4)</td>
<td>Zhang</td>
<td>35</td>
<td>Pre-req Calculus III, Linear Algebra</td>
<td>Sec. 01</td>
<td>TTh 1:30-2:20</td>
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<tr>
<td>110.602</td>
<td>ALGEBRA</td>
<td>Kong</td>
<td>20</td>
<td>Pre-req 110.401-402</td>
<td>Sec. 01</td>
<td>TTh 12-1:15</td>
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<tr>
<td>110.607</td>
<td>COMPLEX VARIABLES</td>
<td>Moser</td>
<td>20</td>
<td>Pre-req 110.311, 110.405</td>
<td>Sec. 01</td>
<td>MW 1:30-2:20</td>
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<td>110.608</td>
<td>Riemann Surfaces</td>
<td>Zucker</td>
<td>20</td>
<td></td>
<td>Sec. 01</td>
<td>TTh 1:30-2:55</td>
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<tr>
<td>110.619</td>
<td>Lie Algebras and Lie Groups</td>
<td>Wentworth</td>
<td>20</td>
<td>Pre-req 110.405</td>
<td>Sec. 01</td>
<td>TTh 9-10:15</td>
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<tr>
<td>110.635</td>
<td>MICROLOCAL ANALYSIS</td>
<td>Sogge</td>
<td>20</td>
<td>Pre-req 110.405</td>
<td>Sec. 01</td>
<td>MW 12-1:15</td>
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<td>110.640</td>
<td>SPECTRAL THEORY</td>
<td>Shalika</td>
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<tr>
<td>110.641</td>
<td>COMPUTATIVE ALGEBRA</td>
<td>Shokurov</td>
<td>20</td>
<td>Pre-req 110.401-402</td>
<td>Sec. 01</td>
<td>TTh 12-1:15</td>
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<tr>
<td>110.646</td>
<td>Riemannian Geometry</td>
<td>Minicozzi</td>
<td>20</td>
<td>Pre-req 110.401-405, 110.413</td>
<td>Sec. 01</td>
<td>MW 1:30-2:15</td>
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<tr>
<td>110.660</td>
<td>QUALIFYING EXAM PROBLEMS</td>
<td>Staff</td>
<td>20</td>
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<tr>
<td>110.726</td>
<td>Topics in Analysis (Nonlinear Wave Equations)</td>
<td>Zelditch</td>
<td>20</td>
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<td>Sec. 01</td>
<td>TTh 10:30-11:45</td>
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<tr>
<td>110.727</td>
<td>TOPICS IN ALGEBRAIC TOPOLOGY</td>
<td>Wilson</td>
<td>20</td>
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<td>Sec. 01</td>
<td>TTh 10:30-11:45</td>
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<tr>
<td>110.730</td>
<td>TOPICS IN COMPLEX GEOMETRY</td>
<td>Staff</td>
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<td>110.734</td>
<td>TOPICS IN ALGEBRAIC NUMBER THEORY</td>
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<tr>
<td>110.742</td>
<td>TOPICS IN PDE (Monge-Ampere Equations)</td>
<td>Spruck</td>
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<td>Sec. 01</td>
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<td>110.762</td>
<td>JAMI SEMINAR</td>
<td>Nakamura</td>
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<td>110.799</td>
<td>THESIS RESEARCH</td>
<td>Staff</td>
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<td>Sec. 01</td>
<td>TBA</td>
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</table>
MATHEMATICS

MEDICINE TUTORIALS
These School of Medicine courses are open only to selected junior and senior premedical students with the approval of their faculty advisor and Preprofessional Advising, Garland Hall - Third Floor. Interdivisional registration is required.

A separate list of the tutorials to be offered will be available at the Registrar's Office after classes begin. Do not list tutorial courses on your course list form. Registration for these courses is accomplished by submitting an approved "add" slip and interdivisional registration form to Preprofessional Advising, as soon as possible after classes begin, and in any event, not later than the fourth week of classes.

Please note: No area code credit is given toward degree for the Medicine tutorials and all tutorials are graded Satisfactory/Unsatisfactory.

MILITARY SCIENCE

374.002 MILITARY SCIENCE LEADERSHIP LAB (1) Butera Limit 100
ROTC cadets only. Students practice their leadership skills in a variety of settings to build a better understanding of the students’ strengths and weaknesses and to provide a forum for discussion of leader development.

374.102 INTRODUCTION TO LEADERSHIP II (2) Butera Prereq: 374.101 or Perm. Req’d Limit 25 (Freshmen only) Establishes a foundation of basic leadership fundamentals such as problem solving, communications, effective writing, goal setting, improving speaking and listening skills, and an introduction to counseling.

374.202 FOUNDATIONS OF LEADERSHIP & TEAMWORK II (2) Levy Prereq: 374.201 or Perm Req’d Limit 25 Class examines how to build effective teams, various methods for influencing action, effective communication in setting and achieving goals, decision-making, creativity in problem solving, and providing feedback.

374.302 APPLIED LEADERSHIP AND TACTICS THEORY II (2) Ballesteros Coreq: 374.002 ROTC cadets only Limit 25 Examines the role communications, values, and ethics play in effective leadership through application of principles in tactical scenarios. Emphasis is on improving written and oral communications skills and military tactics proficiency.

374.402 ADAPTIVE LEADERSHIP AND PROFESSIONALISM (2) Romaine Coreq: 374.002 ROTC cadets only Limit 20 Study includes practical exercises on establishing an ethical command climate and developing values required of a professional officer. Students apply their leadership skills in the ROTC battalion and prepare for commissioning.

374.512 INTERNSHIP Romaine Perm Req’d Limit 5 Students will select a topic relevant to the study of military leadership and will complete a project based on current military doctrine and the contemporary operating environment of current military operations.

PROGRAMS IN MUSEUMS & SOCIETY

389.340 (H) CRITICAL ISSUES IN ART CONSERVATION (3) Balachandran Limit 20 The course examines recent controversies in the conservation of major global art works and sites, raising questions concerning the basic theoretical assumptions, practical methods and ethical implications of art conservation. Cross-listed with Anthropology

389.440 (H,S) WHO OWNS CULTURE? (3) Rodini Limit 12 This seminar-style course explores the complicated, often explosive concept of cultural property, including questions surrounding the ownership, preservation, and interpretation of artifacts, monuments, heritage sites, and living traditions. Cross-listed with Anthropology

389.501 INDEPENDENT STUDY IN MUSEUMS & SOCIETY Rodini
MUSEUM AND SOCIETY INTERNSHIPS Rodin

MUSIC

376.111 RUDIMENTS OF MUSIC THEORY AND MUSICIANSHIP (3) Hardaway/Crouch Limit 15 per section
This course introduces written and aural music fundamentals including notation, scales, intervals, chords, rhythm, meter and sight-singing. Students will compose melodies and short pieces and completing listening projects. Course does not count towards the completion of the minor.

Sec. 01 MWF 10-10:50
Sec. 02 MWF 11-11:50

376.211 MUSIC THEORY AND MUSICIANSHIP I (3) Hardaway
Prereq: Qualifying examination or 376.111
Limit 15
Introduction to basic principles of tonal music through listening, analysis and music making. Students study melody, harmony, voice leading, figured bass and dissonance treatment, and will also undertake short composition projects.

Sec. 01 MWF 12-12:50

376.212 MUSIC THEORY AND MUSICIANSHIP II (3) Hardaway
Prereq: 376.211
Limit 15
This course continues the written and aural work of the previous course but focuses on chromatic harmony while continuing the study of melody, counterpoint and figured bass.

Sec. 01 MWF 11-11:50

376.213 MUSIC THEORY AND MUSICIANSHIP III (3) Smooke
Prereq: 376.212
Limit 15
Continuation of written and aural work of the previous two semesters. Projects in four-voice writing from figured bass and counterpoint in two and three voices are completed, using as models a variety of styles and composers. Students study simple binary, rounded binary and ternary forms, and compose a short work in a tonal idiom.

Sec. 01 MWF 12-12:50

376.242 (H) INTRODUCTION TO ROCK MUSIC (3) Mathews
Limit 20 per section
A survey of the stylistic features and social contexts of American popular music since the 1950s.

Lec. Sec. 01 MW 3-3:50
Sec. 02 Th 3-3:50
Sec. 03 F 3-3:50
Sec. 04 F 4:30-5:20
Sec. 05 Th 3-3:50
Sec. 06 Th 4:30-5:20

376.407 (H) (W) MUSIC AND EVOLUTION (3) Tolbert
Limit 15
This course will examine the bio-cultural evolution of music in light of recent interdisciplinary research on the social bases of human cognitive evolution, and explore its implications for current debates in musicology, ethnomusicology, psychology of music, and human cognitive evolution.

Sec. 01 T 1:30-4

NEAR EASTERN STUDIES

130.102 (H,S) INTRODUCTION TO HUMAN PREHISTORY: FROM NEANDERTHALS TO NEOLITHIC (3) McCarter, S.
Limit 80
Emphasizing theories about human biological and cultural development, this course consists of an in-depth survey of Neanderthal morphology and culture, a brief discussion of evolutionary theory and our fossil ancestors, and concludes with an exploration of the mechanisms and results of the shift from hunting and gathering to farming.
Cross-listed with Anthropology

Sec. 01 TTh 12-1:15

130.110 (H,S) INTRODUCTION TO ARCHAEOLOGY (3) Schwartz
Limit 80
An introduction to archaeology and to archaeological method and theory, exploring how archaeologists excavate, analyze, and interpret ancient remains in order to reconstruct how ancient societies functioned. Specific examples from a variety of archaeological projects in different parts of the world will be used to illustrate techniques and principles discussed.
Cross-listed with Anthropology

Sec. 01 TTh 10:30-11:45

130.326 (H) EGYPT RELIGION AND MYTHOLOGY (3) Jasnow
Limit 25
A survey of the Egyptian religion, including the national temple cults, personal pharaohs, and funerary cults. Sources for the various myths of creation and destruction will be read, along with documents relating to temple rituals. The course will be writing intensive with the grade largely depending on a research paper and class participation.

Sec. 01 MWF 10-10:50
NEAR EASTERN STUDIES

130.339 (H) READING EGYPTIAN TEMPLES: STONEWALL AS MYTHOLOGY, THEOLOGY AND IDEOLOGY (3) Ismail Limit 25 Using the ancient Egyptian temples, this class will question how we construct the Egyptian religion and the history of the Egyptian state. Dean’s Teaching Fellowship Course Sec. 01 MW 12-1:15

130.346 (H) INTRODUCTION TO THE HISTORY OF RABBINIC LITERATURE (3) Katz Limit 20 Broadly surveying classic rabbinic literature, including the Talmud and its commentaries, the legal codes and the response, this seminar explores the immanent as well as the external factors that shaped the development of this literature, the seminal role of this literature in Jewish self-definition and self-perception, and the role of this literature in pre-modern and modern Jewish culture. Cross-listed with Jewish Studies Sec. 01 TTh 9-10:15

130.352 (H) HISTORY OF HASIDISM (3) Katz Limit 20 Although it appears to be a relic of pre-modern Judaism, Hasidism is a phenomenon of the modern era of Jewish history. This course surveys the political and social history of the Hasidic movement over the course of the last three centuries. Students will also explore basic features of Hasidic culture and thought in their historical development. Cross-listed with Jewish Studies Sec. 01 TTh 10:30-11:45

130.401 (H) INTRODUCTION TO MIDDLE EGYPTIAN (Hieroglyphs) (3) Jasnow Limit 10 Prereq: 130.400 Introduction to the grammar and writing system of the classical language of the Egyptian Middle Kingdom (ca. 2135-2000 B.C.). Taught jointly with 133.601 Sec. 01 M 1:30-3:20, W 1:30-4:20

130.451 ELEMENTARY MODERN HEBREW (3) Braun Limit 12 Prereq: 130.450 Credit given only on completion of both semesters. May not be taken on a satisfactory/unsatisfactory basis. Designed to provide reading and writing mastery, to provide a foundation in Hebrew grammar and to provide basic conversational skills. Cross-listed with Jewish Studies Sec. 01 TTh 10:30-11:45

130.455 (H) INTERMEDIATE MODERN HEBREW (3) Braun, Limit 12 Prereq: 130.450 or 130.451 Designed to enrich vocabulary and provide intensive grammatical review, and enhance fluency in reading, writing and comprehension Cross-listed with Jewish Studies Sec. 01 TTh 12-1:15

130.455 (H) ADVANCED MODERN HEBREW (3) Braun Limit 10 Prereq: 130.453 or 130.454 also a solid foundation in reading, writing, and grammar. Designed to: maximize comprehension and the spoken language through literary and newspaper excerpts providing the student with the language of an educated Israeli. Cross-listed with Jewish Studies Sec. 01 TTh 1:30-2:45

130.501 READINGS AND RESEARCH Staff Sec. 01 – Staff Sec. 02 – P.K. McCarter Sec. 03 – Lewis Sec. 04 – Westbrook Sec. 05 – Schwartz Sec. 06 – Bryan

131.801 READINGS AND RESEARCH Schwartz Sec. 01 – Staff Sec. 02 – P.K. McCarter Sec. 03 – Lewis Sec. 04 – Westbrook Sec. 05 – Jannow

131.849 DISSERTATION RESEARCH Sec. 01 – Bryan Sec. 02 – Schwartz Sec. 03 – P.K. McCarter Sec. 04 – Cooper Sec. 05 – Westbrook Sec. 06 – Lewis Sec. 07 – Jannow

132.601 ELEMENTARY AKKADIAN Delnero Limit 10 An introduction to the paleography, grammar and lexicon of the Akkadian language, and the reading of simple texts in that language. Undergraduates admitted to this course earn 4.5 credits per semester. Sec. 01 Th 12-1:50
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Limit</th>
<th>Prerequisites</th>
<th>Section(s)</th>
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<tbody>
<tr>
<td>133.601</td>
<td><strong>INTRODUCTION TO MIDDLE EGYPTIANS</strong> (Hieroglyphs)</td>
<td>Jasnow</td>
<td></td>
<td>Limit 10. Prereq: 133.600 Introduction to the grammar and writing system of the classical language of the Egyptian Middle Kingdom (ca. 2133-2000 B.C.). Taught jointly with 130.401</td>
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</tr>
<tr>
<td>133.611</td>
<td><strong>MIDDLE EGYPTIAN TEXTS</strong></td>
<td>Bryan/Jasnow</td>
<td></td>
<td>Limit 15. Sec. 01  M 1:30-3:20, W 1:30-4:20</td>
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<tr>
<td>133.631</td>
<td><strong>OLD EGYPTIAN</strong></td>
<td>Bryan</td>
<td></td>
<td>Limit 10. Sec. 01 Th 9-11:50</td>
<td></td>
</tr>
<tr>
<td>133.647</td>
<td><strong>DEMOTIC TEXTS</strong></td>
<td>Jasnow</td>
<td></td>
<td>Limit 10. Sec. 01  F 1-2:50</td>
<td></td>
</tr>
<tr>
<td>133.751</td>
<td><strong>SEMINAR IN EGYPTIAN ART</strong></td>
<td>Bryan</td>
<td></td>
<td>Limit 15. The seminar will focus on &quot;amulets&quot; in the first month with an intensive study of their meaning and variety. The second half of the term will look at magical arts in a number of contexts, both elite and non-elite.</td>
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<tr>
<td>134.650</td>
<td><strong>SEMINAR IN HEBREW</strong></td>
<td>Lewis</td>
<td></td>
<td>Limit 10. Cross-listed with Jewish Studies. Sec. 01 T 2-3:50</td>
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</tr>
<tr>
<td>134.744</td>
<td><strong>SURVEY OF ARAMAIC TEXTS</strong></td>
<td>Lewis</td>
<td></td>
<td>Limit 10. This seminar will focus on ancient Hebrew poetry. Cross-listed with Jewish Studies</td>
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**NEUROSCIENCE**

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<tr>
<th>Course Code</th>
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<th>Instructor(s)</th>
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<tbody>
<tr>
<td>080.203 (N,S)</td>
<td><strong>COGNITIVE NEUROSCIENCE: EXPLORING THE LIVING BRAIN</strong> (3)</td>
<td>Whitney</td>
<td>150</td>
<td>Limit 150. Freshmen by permission. This course surveys theory and research concerning how the human brain carries out mental processes. Co-listed as 050.201 in Cognitive Science</td>
<td>MW 3-4:15</td>
</tr>
<tr>
<td>080.250 (N,S)</td>
<td><strong>NEUROSCIENCE LAB: A PRACTICAL APPROACH (LSTM, CG)</strong> (3)</td>
<td>(Gorman</td>
<td>20</td>
<td>Limit 20. Sec. 01 T 1:30-4:20, Th 1:30-4:20, F 9-11:50 Course will give students the &quot;hands-on&quot; experience of the interdisciplinary nature of neuroscience. Students will use anatomical, behavioral, and neurophysiological techniques to understand the basic underlying principles of neuroscience.</td>
<td></td>
</tr>
<tr>
<td>080.340 (N) (W)</td>
<td><strong>NEUROPLASTICITY (ST) (CM)</strong> (3)</td>
<td>Gorman</td>
<td>30</td>
<td>Limit 30. Sec. 01 TTh 9-10:15 Course will investigate mechanisms associated with changes that occur within the nervous system. We will use journal articles to discuss current issues related to developmental, adaptive, and restorative neuroplasticity.</td>
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</tr>
<tr>
<td>080.411 (N)</td>
<td><strong>ADVANCED SEMINAR IN NEUROSCIENCE</strong> (3)</td>
<td>Yoshioka</td>
<td>15</td>
<td>Department majors only Perm. Req’d</td>
<td>Sec. 01 TBA</td>
</tr>
<tr>
<td>080.412 (N)</td>
<td><strong>ADVANCED SEMINAR IN NEUROSCIENCE</strong> (3)</td>
<td>Yoshioka</td>
<td>15</td>
<td>Department majors only Perm. Req’d</td>
<td>Sec. 01 TBA</td>
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<tr>
<td>080.413 (N)</td>
<td><strong>ADVANCED SEMINAR IN NEUROSCIENCE</strong> (3)</td>
<td>Yoshioka</td>
<td>15</td>
<td>Department majors only Perm. Req’d</td>
<td>Sec. 01 TBA</td>
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<tr>
<td>080.414 (N)</td>
<td><strong>ADVANCED SEMINAR IN NEUROSCIENCE</strong> (3)</td>
<td>Yoshioka</td>
<td>15</td>
<td>Department majors only Perm. Req’d</td>
<td>Sec. 01 TBA</td>
</tr>
<tr>
<td>050.315 (N,S)</td>
<td><strong>COGNITIVE NEUROPSYCHOLOGY OF VISUAL PERCEPTION</strong> (3)</td>
<td>McCloskey</td>
<td>15</td>
<td>Limit 15. Sec. 01 TTh 1:30-2:45 Cross-listed with Cognitive Science</td>
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<tr>
<td>050.326 (N,S) (W)</td>
<td><strong>FOUNDATIONS OF COGNITIVE SCIENCE</strong> (3)</td>
<td>Smolensky</td>
<td>30</td>
<td>Limit 30. Sec. 01 MF 3-4:15 Prereq: one 300 level course from Computer Science, Linguistics, Philosophy or Psychology Cross-listed with Cognitive Science</td>
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</tr>
<tr>
<td>050.332 (N,S)</td>
<td><strong>DEVELOPMENTAL COGNITIVE NEUROSCIENCE</strong> (3)</td>
<td>Landau</td>
<td>20</td>
<td>Limit 20. Sec. 01  MW 1:30-2:45 Prereq: 206.103, 050.101, 050.105, 050.204 Perm. Req’d Cross-listed with Cognitive Science</td>
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<tr>
<td>200.368 (N,S)</td>
<td><strong>SLEEP, DREAMS, AND ALTERED STATES OF CONSCIOUSNESS</strong> (3)</td>
<td>Allen</td>
<td>50</td>
<td>Limit 50. Sec. 01 TTh 4-5:20pm Cross-listed with Psychological and Brain Sciences</td>
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<tr>
<td>200.370 (N)</td>
<td><strong>FUNCTIONAL HUMAN NEUROANATOMY</strong> (3)</td>
<td>Courtney</td>
<td>4</td>
<td>Limit 4. Sec. 01 Th 1:30-4 Perm. Req’d. Cross-listed with Psychological and Brain Sciences</td>
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### NEUROSCIENCE

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<thead>
<tr>
<th>Course Code</th>
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<th>Days</th>
<th>Time</th>
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<tbody>
<tr>
<td>200.376 (N,S)</td>
<td>PSYCHOPHARMACOLOGY (3)</td>
<td>Sec. 01</td>
<td>WF</td>
<td>1:30-2:45</td>
</tr>
<tr>
<td>580.472 (E)</td>
<td>MEDICAL IMAGING SYSTEMS (3)</td>
<td>Sec. 01</td>
<td>MWF</td>
<td>10-10:50</td>
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### INDEPENDENT STUDY

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<th>Course Code</th>
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<tbody>
<tr>
<td>080.512</td>
<td>INDEPENDENT STUDY</td>
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### NEUROSCIENCE RESEARCH

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<th>Course Code</th>
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<tbody>
<tr>
<td>080.524</td>
<td>NEUROSCIENCE RESEARCH: FRESHMEN</td>
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<tr>
<td>080.544</td>
<td>NEUROSCIENCE RESEARCH: SOPHOMORES</td>
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<tr>
<td>080.554</td>
<td>NEUROSCIENCE RESEARCH: JUNIORS</td>
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<tr>
<td>080.564</td>
<td>NEUROSCIENCE RESEARCH: SENIORS</td>
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<tr>
<td>080.621</td>
<td>THEORETICAL &amp; COMPUTATIONAL NEUROSCIENCE Niebur Limit 20</td>
<td>Sec. 01</td>
<td>F</td>
<td>4-4:50</td>
</tr>
<tr>
<td>080.650</td>
<td>MENTORED RESEARCH IN NEUROSCIENCE Yoshioka Per. Req’d</td>
<td>Sec. 01</td>
<td>TBA</td>
<td></td>
</tr>
<tr>
<td>080.652</td>
<td>MENTORED RESEARCH IN NEUROSCIENCE Yoshioka Per. Req’d</td>
<td>Sec. 01</td>
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### PHILOSOPHY

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<tr>
<th>Course Code</th>
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<th>Section</th>
<th>Days</th>
<th>Time</th>
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<tbody>
<tr>
<td>150.118 (H,Q)</td>
<td>INTRODUCTION TO FORMAL LOGIC (3) Limit 20 per section Achinstein The fundamentals of symbolic logic, including truth functions, quantification theory, and identity; probability and decision theory.</td>
<td>Sec. 01</td>
<td>M 12-12:50</td>
<td>T 1:30-2:20</td>
</tr>
<tr>
<td>150.205 (H)</td>
<td>INTRODUCTION TO THE HISTORY OF MODERN PHILOSOPHY (3) Limit 20 per section Williams, Michael Limit 35 per section An introduction to early modern philosophy, examining Descartes' Meditations on First Philosophy, Locke's Essay Concerning Human Understanding, Hume's Enquiry Concerning Human Understanding, and selections from Kant's Critique of Pure Reason. We will consider such topics as the relation between philosophy and science, the nature and scope of human knowledge, the nature of the human mind, and the nature of human freedom. Gilman course in the Humanities</td>
<td>Sec. 01</td>
<td>M 3:30-4:30</td>
<td>T 12-12:50</td>
</tr>
<tr>
<td>150.220 (H) (W)</td>
<td>INTRODUCTION TO MORAL PHILOSOPHY (3) Jenkins Limit 20 per section You have questions. What is the good life and how do I live it? Philosophers have answers. The attractions, presuppositions, justifications and limitations of those answers will be the focus of this historically oriented introduction to moral philosophy featuring close reading of primary texts.</td>
<td>Sec. 01</td>
<td>M 11-11:30</td>
<td>02</td>
</tr>
<tr>
<td>150.240 (H)</td>
<td>INTRODUCTION TO POLITICAL PHILOSOPHY (3) Moser Limit 20 This course will examine classical and contemporary writings in political philosophy, focusing primarily on the nature of justice and the justification of democracy.</td>
<td>Sec. 01</td>
<td>M 11-11:30</td>
<td>02</td>
</tr>
</tbody>
</table>
150.423 (H) THE NOMINALISM-REALISM DEBATE, PART I: PLATO AND ARISTOTLE (3) Förster Limit 15
The nominalism / realism debate is about whether general terms refer to something ("universals") that really exist (like Platonic "ideas") or whether they are merely linguistic devices for the classification of individual things. The course examines the origins of this debate in Plato’s Theory of Ideas and Aristotle’s criticism of it.

150.436 (H) PHILOSOPHY OF PSYCHOLOGY (3) Williams, Meredith Limit 15
This course will be an examination of three conceptions of scientific psychology in the 207th Century: the introspectionist psychology of William James; behaviorist psychology of B.F. Skinner (with readings from Pavlov, Thorndike and Watson); and cognitivism (readings from J. Fodor and D. Dennett).

150.442 (H) WITTGENSTEIN (3) Williams, Meredith Limit 15
Prereq: Course on the Philosophical Investigations. This course will be an examination of Wittgenstein’s late writings, especially On Certainty and some of his writings on the philosophy of psychology.

150.476 (H) PHILOSOPHY AND COGNITIVE SCIENCE (3) Greyw Limit 15
This year’s topic is recent work in the cognitive science of religion as an example of research that blurs the study of evolution, cognition, and culture. Questions include: Is the culturally universal belief in supernatural agents a natural by-product of human cognitive architecture? In what ways, if any, are processes of cultural transmission similar to evolutionary processes? Does the naturalistic study of religion undermine religious belief?

150.478 (H) EPistemology of Religious Belief (3) McGill Limit 15
Is it rational to believe that God exists? What can we know about God? We will analyze both traditional arguments for God’s existence and contemporary arguments about the rationality of theistic belief.

150.479 (H) Philosophy of Religion from Kant to Nietzsche (3) Leland Limit 15
Is belief in God rationally justified? What is the relation between faith and reason? Is religion “the opium of the people,” as Marx claimed? What did Nietzsche mean when he wrote, “God is dead”? This course examines influential ideas about religion and religious belief from Kant, Schleiermacher, Hegel, Feuerbach, Marx, Kierkegaard, and Nietzsche.

200.206 (S) FOUNDATIONS OF MIND (4) Feigenson/Halberda Limit 20 per section
Foundations of Mind

300.368 (H) DO MIRACLES (STILL) HAPPEN? (3) de Vries Cross listed with the Humanities Center, German and Romance Languages, Anthropology, and Political Science

150.512 DIRECTED STUDY

150.552 HONORS PROJECT Staff

150.644 SEMINAR IN CONTEMPORARY ETHICS: MORALITY AND THE
This seminar focuses on recent work at the intersection between theories of personhood and ethics. Influence runs both ways. Some hold that what it means to be a person has substantive implications for what morality requires, others that what morality requires had substantive implications for what it means to be a person. Readings may include Strawson, Taylor, Williams, Frankfurt, Wolf, Parfit, Korsgaard and Velleman.

TOPICS IN THE PHILOSOPHY OF LANGUAGE
An examination of significant recent work in the philosophy of language.

THE SECULAR LIVES OF GRACE
Cross-listed with the Humanities Center, German and Romance Languages, Anthropology, and Political Science

THE CONCEPT OF PHILOSOPHICAL AESTHETICS
Cross-listed German and Romance Languages and the Humanities Center

ALL ABOUT ZIZEK
Cross-listed with the Humanities Center and Philosophy

INDEPENDENT STUDY
Sec. 01 M 3-5:50pm

PHYSICS AND ASTRONOMY

171.101 (E, N) GENERAL PHYSICS FOR PHYSICAL SCIENCE MAJORS I (4) Barnett
Lecture: MWF 11-11:50
Sec. 01 Th 8-8:50
02 Th 8-8:50
03 Th 8-8:50
04 Th 8-8:50
05 Th 8-8:50

171.102 (E, N) GENERAL PHYSICS FOR PHYSICAL SCIENCE MAJORS II (4) Lehner
Lecture: MWF 9-9:50
Sec. 01 Th 8-8:50
02 Th 8-8:50
03 Th 8-8:50
04 Th 8-8:50
05 Th 8-8:50
06 Th 8-8:50
07 Th 8-8:50

171.104 (E, N) GENERAL PHYSICS FOR BIOLOGICAL SCIENCE MAJORS II (4) Scalay
Lecture: MWF 9-9:50
Sec. 01 Th 8-8:50
02 Th 8-8:50
03 Th 8-8:50
04 Th 8-8:50
05 Th 8-8:50
06 Th 8-8:50
07 Th 8-8:50
08 Th 8-8:50
09 Th 8-8:50

171.106 (E, N) ELECTRICITY AND MAGNETISM I (4) Race
Lecture: MWF 11-11:50
Sec. 01 Th 1:40-2:30
02 Th 1:40-2:30

173.111 (N) GENERAL PHYSICS LAB I (1)
Sec. 01 W 1:30-2:40
02 W 8-8:50
03 Th 1:30-2:40
04 Th 6-6:50

171.105 (E) JENSEN

171.108 (E) LEE

171.110 (E) MEYERS

171.112 (E) NELSON

171.114 (E) SPLITT

171.116 (E) SUGGIS

171.118 (E) THOMPSON

171.120 (E) WILKINSON

171.122 (E) WISE

171.124 (E) YOUNG

171.126 (E) ZHANG

171.128 (E) ZHOU
GENERAL PHYSICS LAB II (1) Swartz
Limit 24 per section
Prereq: 173.111; Coreq: 171.102 or 171.104 or 171.106
Experiments are chosen from both physical and biological sciences and are designed to give students background in experimental techniques as well as to reinforce physical principles.

INTRODUCTION TO FRONTIER PHYSICS (1) Feldman
Limit 25
Explores modern experimental methods and theoretical ideas in physics.

ELECTRICITY AND MAGNETISM LABORATORY (1) Swartz
Limit 24
Experiments chosen to complement Electricity and Magnetism 171.106 and introduce students to experimental techniques and statistical analysis

STARS & THE UNIVERSE: COSMIC EVOLUTION (3) Riess
Limit 75
Evolution of the universe: from origin in a cosmic explosion to emergence of life on Earth and possibly other planets throughout the universe.

PHYSICS OF MODERN TECHNOLOGIES (3) Walker
Limit 45
This course for non-scientists offers accessible non-mathematical explanations of modern technologies: electric power generation and distribution (AC versus DC), florescent lighting, lasers, computers, the internet, GPS, and student suggested topics.

MODERN PHYSICS (4) Chien, C.L.
Limit 20  Prereq: 171.201
Course completes four-semester introductory sequence that includes 171.105-106 and 171.201. Planck’s hypothesis, de Broglie waves, Bohr atom, Schrödinger equation in one dimension, hydrogen atom, Pauli exclusion principle, conductors and semiconductors, nuclear physics, particle physics.

CLASSICAL MECHANICS II (4) Maksimovic
Limit 35  Prereq: 110.108-109, 171.201
Principles of Newtonian and Lagrangian mechanics; application to central-force motion, rigid body motion, and the theory of small oscillations.

TOPICS IN ADVANCED ELECTROMAGNETIC THEORY (4) Chien, Chih-Yung
Limit 25
Prereq: 171.303 Topics include electromagnetic waves; reflection and refraction; waveguides; retarded potentials and electromagnetic radiation; relativistic electrodynamics.

QUANTUM MECHANICS II (4) Robinson
Limit 30
Prereq: 171.303, 171.202, 110.202
Fundamental aspects of quantum mechanics. Uncertainty relation, Schrödinger equation in one and three dimensions, tunneling, harmonic oscillator, angular momentum, hydrogen atom, spin, Pauli principle, perturbation theory, transition probabilities and selection rules, atomic structure, scattering theory.

ADVANCED PHYSICS LABORATORY (3) Armitage
Limit 24
A broad exposure to modern laboratory procedures such as holography, chaos, and atomic, molecular, and particle physics.

BIOLOGICAL PHYSICS (4) Robbins
Limit 35
Prereq: 110.109, 171.101-102 or 171.103-104 of 171.105-106
Introduces topics of classical statistical mechanics. Additional topics include low-Reynolds number hydrodynamics and E&M of ionic solutions, via biologically relevant examples.

INTRODUCTION TO GALAXIES AND ACTIVE GALACTIC NUCLEI (3) Wyse
Limit 25
Survey of galaxies and the
PHYSICS AND ASTRONOMY

171.404 (N) GENERAL RELATIVITY (2) Krolik
Limit 15  Prereq: 171.204  Discussion of Einstein’s theory of gravitation; gravity will be discussed first as a field theory, and its relation to the metric will be treated later. Physical tests of the theory will be discussed in detail.
Sec. 01  MWF 11-11:50

171.408 (N) NUCLEAR AND PARTICLE PHYSICS (3) Gritsan
Limit 15   Prereq: 171.304, 110.201-202  Basic properties of nuclei, masses, spins, parity. Nuclear scattering, interaction with electromagnetic radiation, radioactivity, Pions, muons and elementary particles, including resonances.
Sec. 01  MWF 11-11:50

171.412 (N) PHASE TRANSITIONS AND CRITICAL PHENOMENA (3) Tchernyshov
Limit 20 (combined with 171.704)  Prereq: 171.312 or 171.703  Course covers phase transitions and critical phenomena: Building on the ideas of spontaneous symmetry breaking and scale invariance at a critical point we develop Landau’s theory of phase transitions and the apparatus of renormalization group using both analytic and numerical techniques for studying interacting systems.
Sec. 01  TTh 9-10:45

171.416 (N) NUMERICAL METHODS FOR PHYSICISTS (4) Neufeld
Limit 30  Prereq: 171.415, 110.201-202  Topics in applied mathematics used by physicists, covering numerical methods: linear problems, numerical integration, pseudo-random numbers, finding roots of nonlinear equations, function minimization, eigenvalue problems, fast Fourier transforms, solution of both ordinary and partial differential equations.
Sec. 01  TTh 9-10:45

171.472 (N) INTRODUCTION TO PLASMA PHYSICS AND ATOMIC PROCESSES IN HOT PLASMAS (3) Finkenthal
Limit 30  Prereq: 171.415, 110.201-202  Course consists of three parts: an introduction of the basic concepts and approaches to plasma physics, a review of the atomic processes which determine the properties of hot plasmas and a brief overview of major laboratory and astrophysical plasma research today. Part 1 considers fluid and kinetic theories (knowledge of basic undergraduate classical mechanics and electromagnetism an asset); part 2 assumes students have an understanding of quantum mechanics at an introductory level. Course gives general overview of subjects under discussion, in preparation for more advanced - specific courses in these areas offered in coming years.
Sec. 01  WF 1:30-2:45

171.502 UNDERGRADUATE INDEPENDENT RESEARCH
Research conducted in senior year in conjunction with experimental equipment of intermediate laboratory or as special project in research group. Credit for independent study given to junior and senior students who act as tutors.

171.504 SENIOR THESIS
Preparation of a substantial thesis based upon independent student research, supervised by at least one faculty member in Physics and Astronomy.

171.604 ELECTROMAGNETIC THEORY
Prereq: 171.303 and 171.304  Theory of the Maxwell equations, with static and dynamic applications, boundary-value problems, guided and free waves, diffraction, scattering, special relativity, electron theory.
Sec. 01  TTh 10:30-11:45

171.606 QUANTUM MECHANICS
Prereq: 171.303 and 171.304  Review of wave mechanics and the Schrodinger equation, Hilbert space, harmonic oscillator, the WKB approximation, central forces and angular momentum, scattering, electron spin, density matrix, perturbation theory (time - independent and time - dependent), quantized radiation field, absorption and emission of radiation, identical particles, second quantization, Dirac equation.
Sec. 01  TTh 10:30-11:45

173.608 ADVANCED LABORATORY
Prereq: 171.303 and 171.304  Experiments carried out on cosmic rays, X-ray scattering Mössbauer effect, atomic beams, and optical spectroscopy.
Sec. 01  M 1:30-4:20

171.615 GALACTIC STRUCTURE AND STELLAR DYNAMICS
Prereq: 171.303 and 171.304  Potential theory; stellar orbits, equilibrium of collisionless systems; stability of collisionless systems, disk dynamics and spiral structure; galactic rotation and the galactic potential; globular cluster evolution.
Sec. 01  TTh 9-10:15

171.618 OBSERVATIONAL ASTRONOMY
Sec. 01  TTh 10:30-
PHYSICS AND ASTRONOMY


INTRODUCTION TO PLASMA PHYSICS AND ATOMIC PROCESSES IN HOT PLASMAS Finkenthal  Limit 20 Course will be a combination between an introduction to plasma physics and an overview of the basic atomic processes which determine the properties of hot, laboratory and astrophysical plasmas.

QUANTUM FIELD THEORY Sundrum  Limit 20 Introduction to relativistic quantum mechanics and quantum field theory. Canonical Quantization; scalar, spinor, and vector fields; scattering theory; renormalization; functional integration; spontaneous symmetry breaking; Standard Model of particle physics.

PHASE TRANSITIONS AND CRITICAL PHENOMENA Tchernyshov  Limit 20 Prereq: 171.312 or 171.703 Course covers phase transitions and critical phenomena. Building on the ideas of spontaneous symmetry breaking and scale invariance at a critical point we develop Landau’s theory of phase transitions and the apparatus of renormalization group using both analytic and numerical techniques for studying interacting systems.

EXPERIMENTAL PARTICLE PHYSICS Gritsan  Limit 15 For graduate students interested in experimental particle physics, or theory students, or students from other specialties. Subjects covered: experimental techniques, including particle beams, targets, electronics, and various particle detectors; and a broad description of high energy physics problems.

GENERAL RELATIVITY Koval  Limit 15 Comprehensive introduction to differential geometry and Einstein’s theory of gravitation.

COSMOLOGY Bennett  Limit 20 Review of basic general relativity, Friedmann solutions, speculations about the early universe, inflation, big bang nucleosynthesis, creation of the microwave background, development of density perturbations, galaxy formation, the intergalactic medium, large-scale structure, dark matter.

INDEPENDENT RESEARCH Sec. 01 – Staff Sec. 02 – Sundrum Sec. 03 – Feldman Sec. 04 – C.L. Chien Sec. 05 – Open Sec. 06 – Reich Sec. 07 – C.L. Chien Sec. 08 – Krolik Sec. 09 – Barnett Sec. 10 – Norman Sec. 11 – Blumenfeld Sec. 12 – Heckman Sec. 13 – Messer Sec. 14 – Starlay Sec. 15 – Ford Sec. 16 – Bagger Sec. 17 – Wise Sec. 18 – Henry Sec. 19 – Neufeld Sec. 20 – Tesanovic Sec. 21 – Blay Sec. 22 – Robb Sec. 23 – Blyzkvyschak Sec. 24 – Brosholth Sec. 25 – Biondi Sec. 26 – Falk Sec. 27 – Kaplan Sec. 28 – Finkenthal Sec. 29 – Leheny Sec. 30 – Markovic Sec. 31 – Tchernyshyov Sec. 32 – Bennett Sec. 33 – Vishniac Sec. 34 – Gritsun
PHYSICS SEMINAR  Neufeld  Limit 30
Graduate students only  Intended for beginning graduate students. Study of the methods and results of modern physics and other topics of interest. Each student will discuss some phase of the subject.

INTERMEDIATE SEMINAR  Feldman  Limit 30  Non-specialized seminar in which second-year graduate students discuss subjects of general interest, supplementing the material of the standard courses and including recent advances in physics.

HOT TOPICS IN ASTROPHYSICS SEMINAR  Norman  Limit 30

INTERMEDIATE SEMINAR  Feldman  Limit 30  Nonspecialized seminar in which second-year graduate students discuss subjects of general interest, supplementing the material of the standard courses and including recent advances in physics.

POLITICAL SCIENCE

POLITICAL PARTIES (3)  Saldin  Limit 20  No discussion of American politics can go too far before political parties begin to intrude. This course will explore the origin, development, importance, and consequences of political parties in the United States.

THE AMERICAN PRESIDENCY (3)  Strauss  Limit 20 per section
This course is an introduction to the study of the presidency. It assumes a basic understanding of the American political system as provided in a course such as Introduction to American Politics or its equivalent. We explore the evolution of the modern presidency, how contemporary presidents operate in the political system, and the sources of successful presidential leadership.

REIMAGINING THE NATION (3)  Wong  Limit 25  A critical examination of four major themes employed in the conception of the nation, that of nature, the body, temporality and territoriality. How has the theorization of these themes shaped and influenced our understanding of what the nation is? Readings include major texts from the field of nationalism and texts from philosophy, cultural studies and geography.

COMPARATIVE POLITICAL BEHAVIOR (3)  Katz
Limit 20 per section  An introduction to the study of political behavior, emphasizing electoral behavior in democratic countries.

CLASSICS OF POLITICAL THOUGHT (3)  Munro  Limit 20 per section
An introduction to Euro-American political thought through a close examination of five thinkers: Plato on the art of political persuasion, Augustine on the relationship between reason and faith, Machiavelli on the art of political judgment, Hobbes on the politics of language and sovereignty, and Michel Foucault on sexuality, individuality, power.

GLOBAL POLITICAL ECONOMY (IR) (3)  Martin-Bennett  Limit 35
Pierz 190.309  Examines the intersection of politics and economics in global affairs. Focuses on theoretical approaches to global political economy; institutions of governance of the global political economy; flows of goods, services, capital, and information; and transborder problems.

ETHICS OF WAR (3)  Grosvogel  Limit 21 per section
POLITICAL SCIENCE

190.311 (S) MIDDLE EAST POLITICS (3) Hazbun Limit 35  A survey of political change and ideological trends across the Middle East. Topics include legacies of colonialism and external intervention, politics of nationalism and state building, impact of oil wealth, challenge of political Islam, prospects for democracy and political inclusion in Lebanon and elsewhere.

190.315 (S) ASIAN AMERICAN POLITICS (3) Chung Limit 20  This course examines issues of political identity, political incorporation, and political participation of Asian Americans. Themes include Asian American panethnicity, the struggle for immigration and citizenship, Asian American electoral politics, political activism and resistance since the 1960s, and the impact of Asian Americans on the politics of race and ethnicity in the United States.

191.317 (S) INTERNATIONAL INSTITUTIONS AND ORGANIZATIONS (3) Gould Limit 35  This course will introduce the major theories informing the study of international organizations and institutions in political science, and then focus on the major international organizations, from the League of Nations to the WTO. For each organization, we will consider not only how the organization works and what it does, but also the conceptual puzzles raised by its activities.

191.328 (HLS) HERMENEUTICS AND POLITICS (3) Sol Limit 25  Theories of interpretation particularly with reference to Christian biblical hermeneutics and fundamentalist literalism. Readings from St. Augustine, Luther, Schleiermacher, Dilthey, Heidegger, Gadamer, Habermas, et al. Dean’s Teaching Fellowship Course

190.329 (S) NATIONAL SECURITY IN THE NUCLEAR AGE (3) David Limit 20  This course examines the impact of weapons of mass destruction on international politics with an emphasis on security issues. The first half of the course focuses on the history of nuclear weapons development during the Cold War and theories of deterrence. The second half of the class considers contemporary issues including terrorism, chemical and biological weapons, ballistic missile defense and proliferation. Requirements include a midterm, final and a ten page paper.

190.331 (S) COMPARATIVE RACIAL POLITICS (3) Hanchard Limit 20 per section Prereq: 190.102 or Perm Req’d Students will learn to utilize qualitative, interpretive methods of comparative politics to examine dynamics of racial and/or ethnic tension in the nation-states of Brazil, Britain, France, Germany, and the United States. Readings will emphasize the role of the state, political economy, national culture, racist ideologies and anti-racist politics in the formation, maintenance and transformation of conditions of race-based inequalities. Students will also become familiar with theories and concepts of race and ethnicity, and their relationship to issues of state power, national identity and social policy.

190.334 (S) CONSTITUTIONAL LAW (3) Grossman Limit 40  Prereq: 190.333 The second semester of a two semester course. Topics include executive and emergency power, rights of criminal defendants, racial and gender equality, and selected free speech and religious freedom issues. Open only to students who have successfully completed 190.333.

190.348 (S) DOMESTIC POLITICS OF CONTEMPORARY CHINA (CP) Tsai Limit 40  This course examines key issues in contemporary Chinese politics, spanning the period from the Communist Revolution (1949) through the Mao (1949-1976) and reform era (1978 to present). Particular emphasis will be placed on contemporary challenges, including the political economy of reform and alternative forms of political participation.
POLITICAL SCIENCE

190.351 (S)  PUNISHMENT AND POLITICS (3) Culbert Limit 30  Focusing on the issue of capital punishment in the United States, this course examines a number of questions related to the negotiation of law, politics, and morality in modern society: What is the purpose of punishment in our society? What is the proper role of the state in carrying out punishment? Does capital punishment differ from other kinds of punishment? If so, how? Answering these questions, the course explores topics in political theory, constitutional law, legal interpretation, and cultural studies.

Sec. 01  MW 1:30-3

191.351 (S)  FILM, MEDIA AND POLITICS (AP) (3) Shogan Limit 20 Aitchison Fellows only (Taught in Washington D.C.)

Sec. 01  T 1-2:50

191.357 (S)  AMERICAN POLITICAL THOUGHT (AP) (3) Wolfson Limit 20 Aitchison Fellows only (Taught in Washington D.C.)

Sec. 01  T 3:15-4:50

191.362 (S)  FOREIGN REALTIONS OF INDIA AND PAKISTAN (CP/IR) (3) Thornton Limit 25  An historical survey of the international relationships of the major South Asian nations. Particular emphasis is placed on the interaction between the regional subsystem and the global system.

Sec. 01  T 1:30-4

190.385 (S)  URbane POLITICS AND POLICY (3) Spence Limit 20  Prereq: 190.384 An analysis of public policy and policy-making for American Cities. Special attention will be given to the subject of urban crime and law enforcement, poverty and welfare, and intergovernmental relations.

Sec. 01  T 1:30-4

190.402 (S)  WASHINGTON INTERNSHIP PROGRAM (3) Staff Aitchison Fellows only

Sec. 01  TBA

190.403 (S)  WASHINGTON SEMINAR (3) Ginsberg Aitchison Fellows only Taught at 1717 Massachusetts Ave. Washington, DC

Sec. 01  T 10-12

190.411 (S)  ENVIRONMENT AND DEVELOPMENT IN THE THIRD WORLD (3) Keck Limit 20 Juniors, Seniors, and above  A research seminar examining the politics of environmental issues in developing countries, with special focus on Latin America. Cross-listed with Latin American Studies

Sec. 01  Th 1:30-4

190.411 (S)  INTERNATIONAL CONFLICT RESOLUTION (3) Pugh Limit 25 Course is intended for Juniors, Seniors and graduate students  An introduction to the theory and practice of international conflict resolution, which will examine how issues of power and identity affect conflict and peacemaking in the international system. Dean’s Teaching Fellowship Course

Sec. 01  T 3-5:30pm

190.450 (S)  POWER (3) Marlow-Bennett Limit 25 Seniors and graduate students only Power is a – if not the – key concept of international relations, yet there is no single definition of power that is accepted by all scholars in the field. In this course we will critically examine definitions of power from classic and contemporary works of international relations, political science, and related areas of study.

Sec. 01  T 1:30-4

190.499 (S)  SENIOR THESIS: INTERNATIONAL STUDIES AND POLITICAL SCIENCE (6) Staff Prereq: 190.471 Limit 30

Sec. 01  TBA

040.129 (H)  DRINKING PARTIES, HOMEROITICISM, AND GENDER POLITICS (3) Tzvetan Todorov Limit 30  Cross-listed with Anthropology, German and Romance Languages, History, Classics, and Studies of Women, Gender, and Sexuality

Sec. 01  Th 1:30-2:45
DO MIRACLES (STILL) HAPPEN? (3) de Vries   Cross listed with the Humanities Center, German and Romance Languages, Anthropology, and Philosophy

RICHARD WRIGHT AND MODERNISM (3) Hayes   Limit 25 Cross-listed with Africana Studies and Sociology

Sec. 01  Th 1:30-4

Sec. 01  Th 1:30-4

Sec. 01  Th 1:30-4

Sec. 01  Th 1:30-4

Sec. 01  F 10-11:50

Sec. 01  T 5:15-7:15pm

Sec. 01  T 1:30-3:20

Sec. 01  Th 2-4

Sec. 01  T 10-11:50

Sec. 01  T 3-4:50

Sec. 01  M 1:30-3:30
POLITICAL SCIENCE

190.673  INSTITUTIONAL ANALYSIS  Cooper  Limit 15  An examination of major variants of the "new institutionalism" as applied to Congress. Emphasis is placed on the substantive and methodological character of similarities and differences and differences in current institutional approaches to the study of Congress, and their impacts.

Sec. 01  Th 4-5:50pm

190.686  GLOBAL CAPITAL AND STATE SOVEREIGNTY (PT)  Connolly  Limit 15  Graduate students only or Perm. Req’d  This course explores classic and contemporary debates on the concept of civil society and critically examines its analytical value in light of recent developments. Topics include the relationship between civil society, the state, and markets; the role of civil society in development and democratization; social capital; and transnational civil society.

Sec. 01  W 10-11:50

300.624  THE SECULAR LIVES OF GRACE  de Vries  Cross-listed with the Humanities Center; German and Romance Languages; Anthropology; and Philosophy

Sec. 01  T 1-3:50

PSYCHOLOGICAL AND BRAIN SCIENCES

200.101 (N, S)  INTRODUCTION TO PSYCHOLOGY (3)  Holland  This course surveys all the major areas of scientific psychology, including the physiological bases of behavior; sensation and perception; learning, memory and cognition; developmental, social, and personality psychology; and psychopathology.

Sec. 01  TTh 9-10:15

200.133 (S)  INTRODUCTION TO SOCIAL PSYCHOLOGY (3)  Drigonos  Limit 200  An introductory survey of social psychology. Topics include social perception, social cognition, attitudes, prejudice, attraction, social influence, altruism, aggression, and group behavior.

Sec. 01  MWF 11-11:50

200.204 (N,S)  HUMAN SEXUALITY (3)  Kraft  Limit 25  Registration by department permission only. Registration details available at www.psy.jhu.edu  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. Cross-listed with Behavioral Biology and Studies of Women, Gender, and Sexuality

Sec. 01  T 12-2:30

200.205 (S)  BEHAVIOR MODIFICATION (3)  Fogel  Limit 30  This course will help students to increase their efficacy in creating behavior change, for both themselves and others, through the understanding and utilization of empirically tested psychological principles. In addition, it will provide an overview of modern-day Behavior Therapies and their approaches to treating psychological disorders.

Sec. 01  TTh 4:30-6pm


Sec. 01  Lec. MWF 1:30-2:20
Sec. 02  T 1:30-2:20
Sec. 03  T 4:30-5:20

200.208 (N,S)  ANIMAL BEHAVIOR (3)  Ball  Limit 180  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.

Sec. 01  TTh 10:30-11:45
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Instructor</th>
<th>Sections</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>200.209 (S)</td>
<td>INTRODUCTION TO PERSONALITY THEORY (3)</td>
<td>Piferi</td>
<td>Sec. 01</td>
<td>MW 1:30-2:45</td>
<td>Limit 100: An overview of the major theories of personality, with their empirical bases and applications.</td>
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<tr>
<td>200.315 (Q)</td>
<td>ADVANCED RESEARCH DESIGN &amp; ANALYSIS (3)</td>
<td>Shelton</td>
<td>Sec. 01</td>
<td>MW 1:30-2:45</td>
<td>Prereq: 200.314 or equivalent: Second half of graduate statistics sequence, covering complex research design and analysis.</td>
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<tr>
<td>200.317 (S)</td>
<td>INTERPERSONAL RELATIONSHIPS (3)</td>
<td>Drigotas</td>
<td>Sec. 01</td>
<td>MW 1:30-2:45</td>
<td>Limit 35: Psychology majors only: Study of the psychological concepts involved in the research and application of personnel planning, recruitment, selection practices, and performance management within organizations.</td>
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<tr>
<td>200.325 (S)</td>
<td>LAW &amp; PSYCHOLOGY: CLINICAL APPLICATIONS (3)</td>
<td>Raifman</td>
<td>Sec. 01</td>
<td>T 3-5:30pm</td>
<td>Limit 100: Introduction to legal standards governing criminal forensic psychology assessments, e.g., competence to stand trial, criminal responsibility, mitigation of death penalty, negation of mens rea, and other criminal law forensic applications. Cross-listed with Behavioral Biology</td>
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<tr>
<td>200.328 (S)</td>
<td>THEORY AND METHODS IN CLINICAL PSYCHOLOGY (3)</td>
<td>Edwin</td>
<td>Sec. 01</td>
<td>M 6-8:30pm</td>
<td>Limit 25: Prereq: 200.212 Abnormal Psych., Theories of Counseling (May be simultaneous): Senior Psychology majors only: A critical examination of the methods of observation, description, reasoning, and inference that underlie the clinical practice of psychology and psychiatry. Cross-listed with Behavioral Biology</td>
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<tr>
<td>200.329 (S,N)</td>
<td>BRAIN, COMMUNICATION, AND EVOLUTION (3)</td>
<td>Lynch</td>
<td>Sec. 01</td>
<td>TTh 10:30-11:45</td>
<td>Prereq: 200.208 or 200.141 or 080.205 or instructor’s permission.</td>
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<tr>
<td>200.343 (S)</td>
<td>MOTIVATION (3)</td>
<td>Piferi</td>
<td>Sec. 01</td>
<td>M 1:30-4</td>
<td>Limit 25: Prereq: 200.011 and 200.146 or Perm. Req d: Cross-listed with Behavioral Biology</td>
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<tr>
<td>200.368 (N,S)</td>
<td>SLEEP, DREAMS, AND ALTERED STATES OF CONSCIOUSNESS (3)</td>
<td>Allen</td>
<td>Sec. 01</td>
<td>TTh 4-5:15pm</td>
<td>Limit 50: Prereq: Intro Psych or 080.101: Cross-listed with Neuroscience</td>
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<tr>
<td>200.370 (N)</td>
<td>FUNCTIONAL HUMAN NEUROANATOMY (3)</td>
<td>Courtney</td>
<td>Sec. 01</td>
<td>Th 1:30-4</td>
<td>Limit 25: Prereq: 080.203 or 080.205: Cross-listed in Neuroscience (080) for systems and Cognitive concentration</td>
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<tr>
<td>200.372 (N,S)</td>
<td>PSYCHOLOGY OF AGING (3)</td>
<td>Piferi</td>
<td>Sec. 01</td>
<td>M 1:30-4</td>
<td>Limit 25: Prereq: 200.141</td>
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<tr>
<td>200.376 (N,S)</td>
<td>PSYCHOPHARMACOLOGY (3)</td>
<td>Gorman</td>
<td>Sec. 01</td>
<td>WF 1:30-2:45</td>
<td>Limit 25: Prereq: 200.141: Cross-listed with Neuroscience</td>
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<tr>
<td>200.502</td>
<td>PSYCHOLOGICAL RESEARCH – FRESHMEN</td>
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<td>Grading Satisfactory/Unsatisfactory only</td>
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<tr>
<td>200.504</td>
<td>PSYCHOLOGICAL RESEARCH – SOPHOMORES</td>
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<td>Grading Satisfactory/Unsatisfactory only</td>
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<tr>
<td>200.506</td>
<td>PSYCHOLOGICAL READINGS</td>
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<tr>
<td>200.510</td>
<td>PSYCHOLOGY INTERNSHIP</td>
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<tr>
<td>200.512</td>
<td>PSYCHOLOGICAL RESEARCH – JUNIORS</td>
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<td>Grading Satisfactory/Unsatisfactory only</td>
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<tr>
<td>200.514</td>
<td>PSYCHOLOGICAL RESEARCH – SENIORS</td>
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<td>Grading Satisfactory/Unsatisfactory only</td>
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<tr>
<td>200.520</td>
<td>SENIORS HONORS RESEARCH</td>
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<tr>
<td>200.614</td>
<td>GRADUATE SEMINAR IN FUNCTIONAL NEUROIMAGING</td>
<td>Gmeindl</td>
<td>Sec. 01</td>
<td>Th 12-12:50</td>
<td>Limit 30: Graduate students only</td>
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<tr>
<td>200.630</td>
<td>TOPICS IN SPATIAL COGNITION</td>
<td>Shelton</td>
<td>Sec. 01</td>
<td>M 3-3:50</td>
<td>Limit 20: Graduate students only</td>
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<tr>
<td>200.633</td>
<td>GRADUATE SEMINAR IN MEMORY</td>
<td>Shelton</td>
<td>Sec. 01</td>
<td>F 3-3:50</td>
<td>Limit 20: Graduate students only</td>
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<tr>
<td>200.642</td>
<td>NEURAL CIRCUITS &amp; BEHAVIOR</td>
<td>Fortune</td>
<td>Sec. 01</td>
<td>M 1-3:20</td>
<td>Limit 20: Graduate students only or Perm. Req d.</td>
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<tr>
<td>200.670</td>
<td>ADVANCED SEMINAR IN VISION</td>
<td>Egeth/Tantis</td>
<td>Sec. 01</td>
<td>F 9:30-11:20</td>
<td>Limit 20: Graduate students only: Cross-listed with Neuroscience</td>
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</tbody>
</table>
PSYCHOLOGICAL AND BRAIN SCIENCES

200.680 PBS SEMINAR Limit 20 Yantis Sec. 01 F 12-12:50

200.810 RESEARCH IN PSYCHOLOGY Staff Graduate students only Sec. 01 TBA

200.811 RESEARCH SEMINAR: HUMAN PERFORMANCE Limit 20 Egeth Graduate students only Sec. 01 TBA

200.813 RESEARCH SEMINAR: COGNITIVE DEVELOPMENT Ferguson Graduate students only Sec. 01 M 1-3:30

200.815 RESEARCH SEMINAR: LEARNING Holland Graduate students only Sec. 01 Th 4

200.818 NEUROSCIENCE DECISION MAKING Stuphorn Limit 20 Sec. 01 TTh 9-10:15

200.820 DIRECTED READINGS AND RESEARCH Staff Graduate students only Sec. 01 TBA

200.821 RESEARCH SEMINAR IN BEHAVIORAL NEUROSCIENCE Ball Limit 20 Graduate students only Sec. 01 W 12-1:30

200.823 RESEARCH SEMINAR: NEUROETHOLOGY Fortune Limit 20 Graduate students only Sec. 01 TBA

200.825 RESEARCH SEMINAR: PSYCHOBIOLOGY Gallagher Graduate students only Sec. 01 TBA

200.828 RESEARCH SEMINAR IN PERCEPTION AND ATTENTION Yantis Limit 20 Graduate students only Sec. 01 TBA

200.830 READINGS IN PSYCHOLOGY Staff Limit 20 Graduate students only Sec. 01 TBA

200.840 RESEARCH SEMINAR: NEURAL SYSTEMS OF MEMORY AND ATTENTION Courtney Limit 20 Graduate students only Sec. 01 W 10-11:20

200.849 TEACHING PRACTICUM Staff Graduate students only Sec. 01 TBA

PUBLIC HEALTH STUDIES

280.101 (S) INTRODUCTION TO PUBLIC HEALTH (3) Alexander Limit 125 Sec. 01 TTh 4:30-5:45pm

280.305 (S) CORPORATIONS AND THE PUBLIC’S HEALTH (3) Rekow Limit 20 This course examines the impact, both positive and negative, that corporations can have on public health domestically and internationally. The role of regulation, social movements, and globalization will be considered. Dean’s Teaching Fellowship Course Sec. 01 MW 1:30-2:45

280.340 (S) FUNDAMENTALS OF HEALTH POLICY & MANAGEMENT (3) Steinmacher/Burton Limit 175; Lab Limit 30 per section. Through lectures and small group discussions, students will develop a framework for analyzing health care policy problems and gain familiarity with current issues including managed care, Medicare and the uninsured. Sec. 01 Lec. MW 3-3:50 Lab 01 M 4-4:50 Lab 02 M 4-4:50 Lab 03 M 4-4:50 Lab 04 W 4-4:50 Lab 05 W 4-4:50 Lab 06 W 4-4:50

280.350 (S) FUNDAMENTALS OF EPIDEMIOLOGY (3) Freidich/Arnold Juniors and Seniors, PHS only, or Perm. Req’d. Limit 125 An introduction to principles and methods for investigating infectious and noninfectious disease within human populations contributing to an understanding of etiologic factors, modes of transmission and pathogenesis. Sec. 01 TTh 1:30-2:45

280.375 (S) CULTURAL FACTORS IN PUBLIC HEALTH (3) LaVeist Limit 75 This course covers influence of culture on health policy, management and practice. Also, provides background in disparities in health in the US. Guest speakers include healthcare providers, managers, and policymakers. Sec. 01 TTh 10:30-11:45

280.499 (W) HONORS IN PUBLIC HEALTH Geho

104.106 (HLS) HISTORY OF MODERN MEDICINE (3) Marks Limit 20 per section Note: Graduate students should register for ME 150.702, School of Medicine. Cross-listed with History of Science & Technology Sec. 01 Lec. 02 MW 10-10:50 F 10-10:50

230.307 (S) SOCIOLOGY OF LATIN AMERICA (3) Von der Heyde Limit 30 Cross-listed with Latin American Studies, Sociology, and Studies of Women, Gender and Sexuality Sec. 01 TTh 10:30-11:45

100.322 (HLS) THE HISTORY OF AFRICAN AMERICANS AT THE JOHNS Sec. 01 W 1:30-4
PUBLIC HEALTH STUDIES

HOPKINS UNIVERSITY (3)
Shell-Weiss - Limit: 12
Cross listed with History, Sociology, and Africana Studies

070.328 (H,S) (W)
THE CONCEPT OF THE PATIENT IN ANTHROPOLOGY (3) Meyers - Limit: 25
Cross-listed with Anthropology
Dean’s Teaching Fellowship Course
Sec. 01 ThF 10:30-11:45

070.334 (H,S) (W)
CHILDREN AND YOUTH IN ARMED CONFLICT (3) Reynolds - Limit: 25
Cross-listed with Anthropology
Sec. 01 W 1:30-4

230.341 (S)
MEDICAL SOCIOLOGY (3) Smith - Limit: 25
Cross-listed with Anthropology
Sec. 01 MW 1:30-2:20

270.360 (N)
CLIMATE CHANGE: SCIENCE & POLICY (3) Waugh - Limit: 30
This course will investigate the policy and scientific debate over global warming. It will review the current state of scientific knowledge about climate change, examine the potential impacts and implications of climate change, explore our options for responding to climate change, and discuss the present political debate over global warming. Cross-listed with Earth & Planetary Sciences
Sec. 01 TTh 3-4:15

140.374 (H,S)
SANITIZING CULTURE: HYGIENE & SANITIZATION IN 20TH CENTURY EAST ASIA (3) Sun - Limit: 20
Cross-listed with History of Science & Technology
Sec. 01 W 1:30-4

362.385 (H,S) (W)
COMMUNITY HEALTH PROMOTION (3) Furr-Holden - Limit: 20
Cross-listed with Africana Studies
Sec. 01 M 1:30-5:50pm

180.390 (S)
HEALTH ECONOMICS AND DEVELOPING COUNTRIES (3) Gersovitz - Limit: 20
Prereq: 180.301
Sec. 01 T 3-5:30pm

280.502
INTERNSHIP IN PUBLIC HEALTH
Goodyear

280.506
RESEARCH - JUNIORS
Goodyear

280.508
INDEPENDENT STUDY IN PUBLIC HEALTH
Goodyear - Limited to Public Health Option students or Perm. Req’d.
(See Dr. James Goodyear)

280.512
RESEARCH IN PUBLIC HEALTH
Gebo - Limited to Public Health Option students or Perm. Req’d. (See Dr. Gebo)

PUBLIC POLICY

195.606
STATISTICS AND DATA ANALYSIS FOR POLICY MAKING II
Gnanaraman Limit: 35 Prereq: 195.605 or Perm. Req’d
Department majors only
Sec. 01 W 5:15-7:45pm

195.608 (W)
THE POLICY TOOLS
Salomon - Limit: 35 Department majors only
Sec. 01 M 5-7:20pm

195.640
POLICY IMPLEMENTATION
Pines - Limit: 20
Sec. 01 Th 10-12:20

195.651
BOARDS AND GOVERNANCE
Knupp - Limit: 20
Sec. 01 W 5-7:20pm

195.652
SOCIAL POLICY -- SPECIAL TOPICS SEMINAR
Mightingale - Limit: 20
Sec. 01 T 10-11:50

195.654
SOCIAL POLICY Nightingale - Limit: 20
Sec. 01 M 1-2:50

195.682
WRITING FOR THE OP-ED PAGE
Sterne - Limit: 20 Department majors only
Sec. 01 T 9:30-10:50

195.683
SEMINAR: APPLIED EVALUATION
Barrow - Limit: 30 Department majors only
Sec. 01 M 3-4:15

195.686
NON-PROFITS IN A THREE SECTOR WORLD
Abramson - Limit: 25
Sec. 01 T 6-8:20pm

195.687
MANAGEMENT SYSTEMS FOR NON-PROFIT ORGANIZATIONS
Hall - Limit: 25
Sec. 01 Th 5-7:20pm

195.688
CITIZEN PARTICIPATION IN PUBLIC POLICY
Ventresca - Limit: 15
Sec. 01 T 1-2:50

195.801
MASTERS THESIS
Newman
Sec. 01 TBA

INDEPENDENT STUDY
230.109 (S) \textit{HOT TOPICS IN EDUCATION (3)} Alexander Limit 15 Freshmen only
This course examines current school reform initiatives and the controversies surrounding them through a sociological lens.

230.114 (S) \textit{LABOR AND GLOBALIZATION (3)} Silver Limit 30 Themes include the impact of global processes such as immigration and capital mobility on the nature of work and employment in different parts of the world, and how local protest has shaped global social change.

230.199 (S) \textit{CRIMINAL JUSTICE AND CORRECTIONS (3)} Harris Limit 60 An overview of the criminal justice system including court watching and riding with a police officer (optional). Class includes guest visits, field trips, and term projects.

230.201 (S) \textit{THE HIP HOP GENERATION: POWER, IDENTITY AND SOCIAL CHANGE (3)} Gosa Limit 24 Hip-hop is used to frame the critical analysis of power, identity, and social change in America. Through music, film, and text, students will explore the topics of (dis)advantage, race, gender/sexuality, and resistance.

230.202 (S) \textit{RESEARCH METHODS FOR THE SOCIAL SCIENCES (3)} Hao Limit 30 The purpose of this course is to provide a sound introduction to the overall process of research and the specific research methods most frequently used by sociologists and other social scientists. The major topics covered include (1) scientific inquiry and the role of theory in research, (2) causation, (3) conceptualization and operationalization, (4) research design-including experiments, survey research, field research, and comparative research.

230.213 (S) \textit{SOCIAL THEORY (3)} Andreas Limit 30 This course provides an introduction to classical sociological theories (with an emphasis on Marx, Weber, and Durkheim). Contemporary theoretical perspectives on social inequality, conflict, and social change are also explored. Emphasis is placed on understanding the theoretical constructs as well as on applying them in the analysis of current social issues.

230.307 (S) \textit{SOCIOLOGY OF LATIN AMERICA (3)} Von der Heydt Limit 30 This course will offer an overview of Latin America's reality through its economic, social, political and cultural dimensions. Latin American development will be analyzed as a historical process determined by intertwined internal socio-economic factors, however, within the constraints of the world economy. Cross-listed with Latin American Studies, Public Health Studies, and Studies of Women, Gender and Sexuality

230.314 (S) \textit{INTERNATIONAL DEVELOPMENT (3)} Arrighi Limit 30 Recent trends in the global distribution of wealth, status and power will be analyzed in light of theories of national and international development. Special attention will be paid to the unevenness of development between and within the global North and South.

230.318 (S) \textit{STATE AND SOCIETY RELATIONS IN MODERN INDIA (3)} Agarwala Limit 30 This course examines the complex, at times conflicting, relationship that has emerged between Indian seats of power from above and Indian expressions of society from below. Attention will be placed on the period between 1947 to the present.

230.325 (S) \textit{COMPARATIVE AND HISTORICAL SOCIOLOGY RESEARCH PRACTICUM (3)} Silver Limit 30 This course provides "hands on" research experience in comparative and historical sociology. Sociological research tools and perspectives will be used to analyze social structure, conflict and change. This course is suitable for both majors and non-majors, and fulfills the "research practicum" requirement for Sociology majors.

230.332 (S) \textit{RACE, RACISM, AND RACIAL PRIVILEGE (3)} McDonald Limit 30 This course will examine the concepts of race, racism, and racial privilege in contemporary America, and the West in general. Examples from other countries
SOCIOLGY

will be integrated as well. Historical
contexts such as the colonialism, the Civil
War and Reconstruction, the Civil Rights
movement, and the post-Civil Rights era
will help to provide an understanding of
the social, political, economic, and
cultural forces processes that have
constructed and shaped the concepts of
race and the racialized subject over time.

230.341 (S) MEDICAL SOCIOLOGY (3) Smith
Limit 30 per section. This course
 introduces students to medical sociology,
 which is the application of the
sociological perspective to health and
health care. Major topics include stress,
social epidemiology, and the social
organization of health care. Cross-listed
with Public Health Studies

Sec. 01 MW 1:30-2:20
Sec. 02 F 1:30-2:20
Sec. 03 F 12-12:50

230.388 (S) SOCIOLOGY OF FAMILY (3)
Cherlin Limit 15. Sociological
perspectives on contemporary family life,
including marriage and divorce,
cohabitation, single parenthood, same-sex
partnerships, children’s well-being,
balancing work and family
responsibilities, domestic violence, and
government policy toward families.
Cross-listed with Studies of Women,
Gender, and Sexuality

Sec. 01 TTh 1:30-2:45

100.322 (H,S) (W)
THE HISTORY OF AFRICAN
AMERICANS AT THE JOHNS
HOPKINS UNIVERSITY (3)
Shell-Weiss Limit 12
Cross-listed with History, Public Health
Studies, and Africana Studies

Sec. 01 W 1:30-4

362.457 (H,S) RICHARD WRIGHT AND
MODERNISM (3) Hayes Limit 25
Cross-listed with Political Science and
Africana Studies

Sec. 01 Th 1:30-4

230.500 INDEPENDENT STUDY

230.502 SENIORS HONORS PROGRAM

230.506 INDEPENDENT RESEARCH

230.508 INTERNSHIP

230.601 RESEARCH DESIGN DeLacq
Limit 15 A survey of research design
with emphasis on the appropriateness of
the design of the research for the
theoretical problems to which it is
addressed. Discussions of funded
research proposals illustrate practical
problems related to human subjects,
availability of archival data, and timing of
measurement.

Sec. 01 T 2-3:50

230.603 CONTEMPORARY SOCIAL
THEORY Andreas Limit 15
Contemporary theories of social
interaction. Functionalism: Parsons and
Merton. Critical sociology and conflict
theory: Mills, Habermas, and Bourdieu.
Symbolic interactionism: Mead, Blumer,
and Goffman. Theories of rational choice:
Humans, Blau, and Coleman.
Ethnomethodology, standpoint theory,
and postmodernism: Garfinkel, Smith,
Foucault. Alternative solutions to the
micro-macro “bridging problem.”

Sec. 01 Th 2-3:50

230.604 REGRESSION ANALYSIS Plank
Limit 15 Seminar in multiple regression
(least squares and alternative estimation
procedures) with a focus on sociological
problems and software applications.
Graduate student prerequisite: 230.600 or
equivalent. Undergraduates only
admitted with instructor's permission.

Sec. 01 W 10-11:50, F 10-10:50

230.605 CATEGORICAL DATA ANALYSIS
Hao Limit 15. This course provides
the students with a set of statistical tools
to understand and interpret social science
research dealing with categorical
dependent variables and to prepare
students to apply these models in their
own research. The models covered in the
course include logit, probit, and Poisson
models. The selected topics include
multi-level models and measurement
models.

Sec. 01 M 10-11:50, W 4:30-5:20

230.609 DISSERTATION SEMINAR Kohn
Limit 15 A semester-long course
designed to enhance graduate students'
understanding of the logic of sociological
research, from the formulation of a
research problem to proposal writing and
data analysis. This course is designed for
advanced graduate students preparing
their dissertation proposals.

Sec. 01 T 10-11:50

230.611 SEMINAR ON COMPARATIVE AND
WORLD-HISTORICAL
SOCIOLOGY Arvigo Limit 15
In this seminar we will read key texts in
comparative sociology. The topics
SOCIOLGY
covered are cross-national sociology, comparative national development, comparing world-systems, the modern world-system, globalization, and social movements.

230.657 RACE, SEGREGATION, SOCIAL INEQUALITY. Bennett Limit 15
Residential segregation is a persistent feature of U.S. urban landscapes. It is an index of social position; one with serious consequences for minority populations. We will approach the broad study of residential segregation as a form of racial and ethnic inequality. Students will explore the history of residential segregation in the U.S., its patterns and causes, as well as its social, economic, and demographic consequences.

230.660 SOCIAL STRUCTURE AND PERSONALITY. Kohn Limit 15
An intensive examination of the research literature on the relationships of position in the social structure (particularly the class structure and the social-stratification hierarchy) with personality, based primarily on research conducted by the instructor and his collaborators in the United States, Japan, Poland when it was socialist, Poland and Ukraine during their transitions from socialism to nascent capitalism, and (currently) China during its very different transformation.

230.800 INDEPENDENT STUDY
230.801 RESEARCH ASSISTANTSHIP
Sec. 02 – Alexander
Sec. 02 – Arrighi
Sec. 03 – Cherlin
Sec. 04 – Hao
Sec. 05 – Ashby
Sec. 06 – McDonald
Sec. 07 – Plank
Sec. 08 – Andrews
Sec. 09 – Bennett
Sec. 10 – DeLuca
Sec. 11 – Silver
Sec. 12 – Agarwala

230.802 DISSERTATION RESEARCH
See 230.801 for faculty section numbers

230.804 RESEARCH APPRENTICESHIP
See 230.801 for faculty section numbers

230.811 TEACHING ASSISTANTSHIP
See 230.801 for faculty section numbers

230.815 RESEARCH PAPER I

230.816 RESEARCH PAPER(1,8),(995,995)

THE THEATRE ARTS & STUDIES PROGRAM

225.300 (H) CONTEMPORARY THEATRE AND FILM: AN INSIDER’S VIEW (3) Astin Limit 50
An introduction to the performing arts, including an overview of theatre history, acting styles and the interaction of art and society. A personal view from inside.

225.301 (H) ACTING AND DIRECTING WORKSHOP I (3) Astin Limit 16
An introduction to the fundamentals of acting through exercises, improvisation, and work on scenes from established plays and Shakespearean sonnets, based on the teachings of Stanislavsky, Greet, Bolshoevsky, Michael Chekhov, Chirman, and Meisner. This course also includes a brief survey of major playwrights. Plays will be read, analyzed, and employed in scene work.

225.308 (H) SHAKESPEARE IN PERFORMANCE (3) Glossman Limit 15
The techniques and craft of following a Shakespearean text directly into character and action. Students will work with a selection of Shakespeare’s plays—Twelfth Night, Hamlet, The Winter’s Tale, and King Lear—in exploring specific ways in which the power of the lines can be translated dynamically and immediately into vocal and physical performance. (Some background in the acting sequence is encouraged.)

225.310 (H) STAGECRAFT (3) Roche Limit 6
A hands-on approach to the technical and theoretical elements of production. Meets in the Merrick Barn Scene Shop and the Carriage House Theatre.

225.312 (H) ACTING CHEKHOV AND O’NEILL (3) Astin Limit 16
Prereq: At least one
acting workshop (225.301 or 225.306). Using the plays of Anton Chekhov and Eugene O'Neill, fundamentals from the Acting Workshops are applied in both preparation and scene work as the student employs the basics in order to build a character for the stage. Play analysis is included.

225.319 (H) PERFORMANCE II (3) Denithorne
Limit 20. Perm. Req’d. Auditions will be announced in November or December or call instructor at 6-0618 For students who have successfully completed Performance (225.320).

225.320 (H) PERFORMANCE (3) Denithorne
Limit 20. Perm. Req’d. Auditions will be announced in November or December or call instructor at 6-0618. The student is given specific acting assignments, and develops them as special projects for public performance under the direct supervision of the instructor. The goal is performance on a professional level.

225.321 (H) THE LAB – A COLLABORATIVE WORKSHOP (4) Denithorne Limit 20. Perm. Req’d. At least one course in Acting, Directing or Playwriting. Admission to the class is by interview. TBA in November or December, 2007. Prior to that contact instructor at 6-0618. A collaborative workshop for advanced actors, directors and playwrights, based on the model used at Circle Repertory Company in N.Y.C. Students-artists are encouraged in a process-oriented environment. Presentation given at term’s end.


225.327 (H) THE BONES OF THEATRE – DRAMATIC STRUCTURES (PART I) (3) Martin Limit 15 Perm. Req’d. Structures of shamanistic theatre, classical comedy, and medieval theatre are discovered in works by Beckett, Fo, Brecht, Churchill, Mee and Wertenbaker. Sanskrit Drama and “rasa” methods are examined against modern artists; Chinese Yuan Drama and Noh Theatre against Brecht, Yeats and Mabou Mines.

225.520 INDEPENDENT STUDY: PROJECTS IN THEATRE Astin
Sec. 01 TBA
### INTERDEPARTMENTAL

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>360.238 (H,S)</td>
<td>QUEER COMFORTS: HAVING, NEEDING, AND WANTING IN THEORY AND LITERATURE (3) McK</td>
</tr>
<tr>
<td>360.258 (S)</td>
<td>GENDER AND HEALTH: A LIFE COURSE PERSPECTIVE (3) Goodfellow</td>
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<tr>
<td>360.534</td>
<td>DIRECTED READINGS - WGS</td>
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<td>360.536</td>
<td>DIRECTED WRITINGS - WGS</td>
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### HISTORY

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<th>Course Code</th>
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<tr>
<td>100.428 (H,S)</td>
<td>LONDON IN THE TWENTIETH CENTURY (3) Walkowitz</td>
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<tr>
<td>100.498 (H,S)</td>
<td>COLLOQUIUM: HISTORY OF FAMILY AND GENDER IN THE UNITED STATES (3) Ditz</td>
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### HUMANITIES

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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>300.312 (H)</td>
<td>IMAGINING REVOLUTION AND UTOPIA (3) Moss</td>
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<tr>
<td>300.624</td>
<td>SECULARISM AND BEYOND de Vries</td>
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### PSYCHOLOGICAL & BRAIN SCIENCES

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<th>Course Code</th>
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<tr>
<td>200.204 (N,S)</td>
<td>HUMAN SEXUALITY (3) Kraft</td>
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### SOCIOLOGY

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>230.307 (S)</td>
<td>SOCIOLOGY OF LATIN AMERICA (3) Von der Heydt</td>
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<tr>
<td>230.388 (S)</td>
<td>SOCIOLOGY OF FAMILY (3) Cherlin</td>
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### WRITING SEMINARS

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>220.105 (H)</td>
<td>INTRODUCTION TO FICTION AND POETRY WRITING I, TELLING IT</td>
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<tr>
<td>220.106 (H)</td>
<td>INTRODUCTION TO FICTION AND POETRY WRITING II, TELLING IT</td>
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<tr>
<td>220.108 (H)</td>
<td>INTRODUCTION TO FICTION &amp; NON-FICTION I</td>
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<td>220.200 (H)</td>
<td>INTRODUCTION TO FICTION</td>
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<tr>
<td>220.201 (H)</td>
<td>INTRODUCTION TO POETRY</td>
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</tbody>
</table>
WRITING SEMINARS

WORKSHOP (3) Basford Limit 15
Instructor's permission required.

220.202 (H) INTRODUCTION TO NONFICTION: MATTERS OF FACT
Biddle Limit 17 Sec. 01 W 1:30-4

220.203 (H) INTRODUCTION TO SCIENCE WRITING (3) Staff Limit 15
Sec. 01 F 1:30-4

220.303 (H) INTERMEDIATE DRAMATIC WRITING: PLAYS (3) Staff
Instructor's permission required. Limit 15
Sec. 01 F 1:30-4

220.316 (H) SEMINAR: OPINION WRITING (3) Kane
Limit 15 Instructor will assign student topics on which they will write essays. Essays will be discussed in class and critiqued for style, grammar, coherence and effectiveness.
Sec. 01 W 7-9:30pm

220.326 (H) INTERMEDIATE FICTION: POINT OF VIEW IN SHORT FICTION (3)
Leithauser Limit 15 Emphasis in writing assignments to develop concision and economy, with close attention to setting, pace, point of view. Reading will include James, Chekhov, Kafka, Hemingway, Cheever, Borges, Flannery O'Connor, Malamud and Updike.
Sec. 01 M 3-5:30pm

220.335 (H) INTERMEDIATE FICTION: FICTION AND FACT Davies Limit 15 Perm. Req'd. A workshop in fictions that are "on" something, that is: fictions that take as their organizing principal the consideration of some material or intellectual subject. Readings will include famous examples of the anatomi cal form as well as writings in contemporary metaphysics.
Sec. 01 Th 3-5:30pm

220.337 (H) INTERMEDIATE DRAMATIC WRITING: FILM (3) Lapadula
Perm. Req'd Limit 15 An intensive workshop focusing on methodology: enhancing original characterization, plot development, conflict, story, pacing, dramatic foreshadowing, the element of surprise, text and subtext, act structure and visual storytelling. Each student is expected to present sections of his/her "screenplay-in-progress" to the class for discussion. The screenplay Chinatown will be used as a basic text.
Sec. 01 F 4:30-7pm

220.343 (H) INTERMEDIATE FICTION: CONTEMPORARY ASIAN AMERICAN FICTION (3) DeLuna
Limit 20 An introduction to Asian American literature through study of major novels in the field. Selected novelists include Frank Chin, Ru-young Kim, Maxine Hong Kingston, Juniper Lee, Chang-rae Lee, Bette Bao Lord, Bharati Mukherjee, Amy Tan. Class discussion will mainly center on the content and literary artistry of the novels. Students will be given the opportunity to interpret and reflect on these works in writing, and to try their hand at producing stories or essays, by focusing on subjects of interest from within a broad range of issues concerning race and ethnicity in America.
Sec. 01 M 1:30-4

220.378 (H) POETIC FORMS II (3) Williamson
Perm. Req'd Limit 15 The course builds on the information and techniques encountered in Poetic Forms I, and uses them in reading and imitating a range of contemporary poets.
Sec. 01 W 1:30-4

220.381 (H) INTERMEDIATE POETRY: A SAMPLING OF POETIC TROPEs (3)
Williamson Perm. Req'd Limit 15 Each week we will try to map commonly recurring metaphors in poetic tradition; and each week students will try to add their own original poems to those strains of metaphor. For instance, we'll trace the metaphor of the Nightingale as emblematic of mute suffering transformed into poetic song from Ovid through Shakespeare, Milton, Keats, and so forth into contemporary poetry to see how the "bird trope" is made use of and revised by different artistic temperaments, motives, styles, and in different eras. The writing assignment will be each week for students to add their poems to that week's historical "lineage."
Sec. 01 Th 1:30-4

220.384 (H) INTERMEDIATE NONFICTION: I, ME, MINE: AMERICAN AUTOBIOGRAPHY (3) Biddle
Prereq: 225.145 Limit 15 A study of the genre's evolution from Benjamin Franklin to Malcolm X.
Sec. 01 W 4:30-7pm
### WRITING SEMINARS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Credits</th>
<th>Section</th>
<th>Days</th>
<th>Time</th>
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<tbody>
<tr>
<td>220.401 (H)</td>
<td>ADVANCED FICTION (3) McGarry</td>
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<td>3</td>
<td>Sec. 01</td>
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<td>Perm. Req’d Limit 15</td>
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<tr>
<td>220.402 (H)</td>
<td>READINGS IN FICTION: NOVELS OF VISION: VIRGINIA WOOLF AND YASUHARU KAWABATA (3)</td>
<td>McGarry</td>
<td>3</td>
<td>Sec. 01</td>
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<td>6:30pm</td>
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<td>Perm. Req’d Limit 15</td>
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<td>We will read Woolf's &quot;The Waves,&quot; &quot;To the Lighthouse&quot; and &quot;Between the Acts&quot; along with Kawabata’s &quot;Snow Country,&quot; &quot;Thousand Cranes,&quot; &quot;Sound of the Mountain&quot; and &quot;Beauty and Sadness,&quot; examining ways in which east and west use descriptive modes of story-telling.</td>
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<td>220.411 (H)</td>
<td>READINGS IN POETRY: POETRY OF WAR (3) Salter</td>
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<td>3</td>
<td>Sec. 01</td>
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<td>Perm. Req’d Limit 20</td>
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<td>A study of modern war poetry, especially of the two World Wars, including work by W.B. Yeats, Rupert Brooke, Wilfred Owen, W.H. Auden, Louis MacNeice, Randall Jarrell, Henry Reed, Richard Wilbur, Anthony Hecht. Some poetry concerning other conflicts, from the Trojan War to the war in Iraq, will also be addressed. What is the role of poetry in responding to political events? Students will write critical papers as well as poems.</td>
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<td>220.412 (H)</td>
<td>READING IN POETRY: ELIOT, CRANE AND STEVENS (3) Irwin</td>
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<td>3</td>
<td>Sec. 01</td>
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<td>Perm. Req’d Limit 14</td>
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<tr>
<td>220.415 (H)</td>
<td>READINGS: THE RUSSIAN SHORT STORY (3) Frydman</td>
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<td>1:30-4</td>
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<td>Perm. Req’d Limit 15</td>
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<td>A discussion seminar designed as both a study of the short story form so well used by many Russian writers, and of those writers themselves. Readings will include works of Pushkin, Gogol, Turgenev, Tolstoy with heaviest emphasis on works of Chekhov, and Babel. In the last we will be looking at possible influences on American writers. (Formerly 220.308)</td>
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<td>220.502</td>
<td>INDEPENDENT STUDY</td>
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<td>220.508</td>
<td>HONORS THESIS Department Permission Required</td>
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<tr>
<td>220.510</td>
<td>PRACTICING JOURNALISM Perm. Req’d</td>
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<tr>
<td>220.614</td>
<td>GRADUATE SCIENCE WORKSHOP Finkbeiner Limt 12 Intensive seminar, at a professional level, in the writing of factual prose about scientific matters, whether for the general reader or for professional scientists as audience. Weekly writing, editing, and reading assignments. (Will meet in Gilman 260, office)</td>
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<td>3</td>
<td>Sec. 01</td>
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<td>3-5:50pm</td>
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<tr>
<td>220.624</td>
<td>FICTION WORKSHOP McDermott</td>
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<td>Sec. 01</td>
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<td>2-4:50</td>
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<tr>
<td>220.626</td>
<td>POETRY WORKSHOP Irwin</td>
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<td>Sec. 01</td>
<td>M</td>
<td>3-5:50pm</td>
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<tr>
<td>220.631</td>
<td>READINGS IN POETRY: LOWELL, BERRYMAN, HECHT AND THE 20TH CENTURY Salter</td>
<td></td>
<td>3</td>
<td>Sec. 01</td>
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<td>2-4:50</td>
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<td>A study of three major figures in American poetry of the mide-20th century. An additional poet, Randall Jarrell, will be read, especially for his critical appraisals of the period. Students will write imitations, as well as their own multi-part poem drawing lessons from these masters of the longer poem and of the poetic sequence.</td>
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<tr>
<td>220.636</td>
<td>TECHNIQUES OF FICTION: VARIETIES OF VIEW POINT Leithauser Readings in writers who develop what might be called “disparate outlooks,” including possibly Hallidore Laxness, Sylvia Townsend Warren, Gabriel Garcia Marquez, Italo Calvino, Kingsley Amis, and John Cheever.</td>
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<td>2-4:50</td>
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<td>220.800</td>
<td>INDEPENDENT STUDY</td>
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<td>220.802</td>
<td>THESIS</td>
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### Applied Mathematics and Statistics

#### STATISTICAL ANALYSIS I (4)
**G.W.C. Whiting School of Engineering Courses**

550.111 (E,Q) **Limit 50 per section**
- First semester of a general survey of statistical methodology. Topics include descriptive statistics, probability models, random variables, expectation, sampling, the central limit theorem, classical and robust estimation of location, confidence intervals, hypothesis testing, two-sample problems, introductory analysis of variance, introductory nonparametric methods. Three lectures and a conference weekly. Some use of computing with the Minitab statistical package, but prior computing experience not required. Prerequisite: four years of high school mathematics. Students who may wish to undertake more than two semesters of probability and statistics should consider 550.420-430.

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<th>Lecture Section</th>
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<tr>
<td>02</td>
<td>MWF 1:30-2:20</td>
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<td>04</td>
<td>Th 12:30-1:30</td>
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<td>05</td>
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##### STATISTICAL ANALYSIS II (4)

550.112 (E,Q) **Limit 50 per section**
- Second semester of a general survey of statistical methodology. Topics include least squares and regression analysis, correlation, further nonparametric methods, chi-square tests, the likelihood concept, decision theory, Bayesian inference, time series, simultaneous equations, sample survey design. Students who may wish to undertake more than two semesters of probability and statistics should consider 550.420-430.

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#### DISCRETE MATHEMATICS (4)

550.171 (Q) **Limit 50 per section**
- Introduction to the mathematics of finite systems. Logic; Boolean algebra; induction and recursion; sets, functions, relations, equivalence, and partially ordered sets; elementary combinatorics; modular arithmetic and the Euclidean algorithm; group theory; permutations and symmetry groups; graph theory. Selected applications. The concept of a proof and development of the ability to recognize and construct proofs are part of the course.

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<th>Lecture Section</th>
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<td>01</td>
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#### MATHEMATICAL MODELS FOR DECISION MAKING: DETERMINISTIC MODELS (4)

550.251 (E,Q) **Limit 35 per section**
- This course is an introduction to management science and the quantitative approach to decision making. Our focus will be on deterministic models, in which we assume that all problem parameters are known with certainty. The covered topics may include Linear and Integer Programming, Network Models, Inventory Models (Stationary Demand), Nonlinear Programming, Goal Programming, and Dynamic Programming. We emphasize model development and case studies, using spreadsheets and other computer software. The applications we study occur in manufacturing and transportation systems, as well as in finance and general management.

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<th>Lecture Section</th>
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<td>01</td>
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<td>02</td>
<td>Th 3:30-5:30</td>
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#### LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS (4)

550.291 (E,Q) **Limit 40 per section**
- An introduction to the basic concepts of linear algebra, matrix theory, and differential equations that are used widely in modern engineering and science. Intended for engineering and science majors whose program does not permit taking both 110.201 and 110.302.

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<th>Lecture Section</th>
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<td>04</td>
<td>T 3:30-4:30</td>
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**APPLIED MATHEMATICS AND STATISTICS**

550.310 (E,Q) **PROBABILITY AND STATISTICS FOR THE PHYSICAL AND INFORMATION SCIENCES AND ENGINEERING**
Limit 50 per section
Prerequisite: One year of Calculus
Recommended Coreqs: Multivariable Calculus
An introduction to probability and statistics at the calculus level, intended for engineering and science students planning to take only one course on the topics. This course will be at the same technical level as 550.311. Students are encouraged to consider 550.420-430 instead. Combinatorial probability, independence, conditional probability, random variables, expectation and moments, limit theory, estimation, confidence intervals, hypothesis testing, tests of means and variances, goodness-of-fit. **Students cannot receive credit for both 550.310 and 550.311.**

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<th>Lec.</th>
<th>Sec. 01</th>
<th>MW 11-11:50</th>
<th>T 1:30-2:20</th>
<th>Th 3-3:50</th>
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550.311 (E,Q) **PROBABILITY AND STATISTICS FOR THE BIOLOGICAL SCIENCES AND ENGINEERING**
Limit 50 per section
Prerequisite: One year of calculus; Corequisite: 110.202 recommended
An introduction to probability and statistics at the calculus level, intended for students in the biological sciences planning to take only one course on the topics. This course will be at the same technical level as 550.310. Students are encouraged to consider 550.420-430 instead. Combinatorial probability, independence, conditional probability, random variables, expectation and moments, limit theory, estimation, confidence intervals, hypothesis testing, tests of means and variances, and goodness-of-fit will be covered. **Students cannot receive credit for both 550.310 and 550.311.**

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550.362 (E,Q) **INTRODUCTION TO OPTIMIZATION II**
Limit 50
Prerequisites: 550.361 and multivariable calculus
An introductory survey of optimization methods, supporting mathematical theory and concepts, and application to problems of planning, design, prediction, estimation, and control in engineering, management, and science. Study of varied optimization techniques including linear programming, network problem methods, dynamic programming, integer programming, and nonlinear programming. Appropriate for undergraduate and graduate students without the mathematical background required for 550.661.

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550.386 (E,Q) **SCIENTIFIC COMPUTING: DIFFERENTIAL EQUATIONS**
Limit 40
Prerequisites: Calculus III, and 550.291 or approved alternative (e.g., 110.201)
A first course on computational differential equations and applications. Topics include floating-point arithmetic, algorithms and convergence, root-finding (midpoint, Newton, and secant methods), numerical differentiation and integration, and numerical solution of initial value problems (Runge-Kutta, multistep, extrapolation methods, stability, implicit methods, and stiffness). Theoretical topics such as existence, uniqueness, and stability of solutions to initial-value problems, conversion of higher-order non-autonomous equations to systems, etc., will be covered as needed. Matlab is used to solve all numerical exercises; no previous experience with computer programming is required.

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550.413 (E,Q) **APPLIED STATISTICS AND DATA ANALYSIS**
Limit 60
Prerequisite: 550.112 or equivalent
An introduction to basic concepts, techniques, and major computer software packages in applied statistics and data analysis. Topics include numerical descriptive statistics, observations and variables, sampling distributions, statistical inference, linear regression, multiple regression, design of experiments, nonparametric methods, and sample surveys. Real-life data sets are used in lectures and computer assignments. Intensive use of statistical packages such as S+ to analyze data.

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<th>Lec.</th>
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<td>550.426</td>
<td>INTRODUCTION TO STOCHASTIC PROCESSES (4)</td>
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<td>550.427</td>
<td>STOCHASTIC PROCESSES IN FINANCE (4)</td>
<td>Wierman</td>
<td>Limit 50</td>
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<tr>
<td>550.430</td>
<td>INTRODUCTION TO STATISTICS (4)</td>
<td>Jedynak</td>
<td>Limit 50 per section</td>
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<td>550.439</td>
<td>TIME SERIES ANALYSIS (3)</td>
<td>Torcaso</td>
<td>Limit 50</td>
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<tr>
<td>550.442</td>
<td>INVESTMENT SCIENCE (4)</td>
<td>Naiman</td>
<td>Limit 60</td>
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<tr>
<td>550.444</td>
<td>MODELING AND ANALYSIS OF SECURITIES AND FINANCIAL MARKETS I (4)</td>
<td>Audley</td>
<td>Limit 60</td>
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</table>
APPLIED MATHEMATICS AND STATISTICS

550.448 (E,Q) FINANCIAL ENGINEERING (4) Audley
Limit 50   Prereqs: 550.442 or 550.444 or Perm. Req.
This course focuses on structured securities and the structuring of aggregates of financial instruments into engineered solutions of problems in capital finance. Topics include the fundamentals of creating asset-backed and structured securities — including mortgage-backed securities (MBS), stripped securities, collateralized mortgage obligations (CMOs), and other asset-backed collateralized debt obligations (CDOs) — structuring and allocating cash-flows as well as enhancing credit; equity hybrids and convertible instruments; asset swaps, credit derivatives and total return swaps; assessment of structure-risk interest rate-risk and credit-risk as well as strategies for hedging these exposures; managing portfolios of structured securities; and relative value analyses (including OAS and scenario analysis).

Lec. Sec. 01 TTh 1:30-2:45 F 1:30-2:20

550.453 (E,Q) MATHEMATICAL GAME THEORY (4) Goldman
Limit 40   Prereqs: multivariable calculus, probability, linear algebra.
Mathematical analysis of cooperative and noncooperative games. Theory and solution methods for matrix games (two players, zero-sum payoffs, finite strategy sets), games with a continuum of strategies, N-player games, games in rule-defined form. The roles of information and memory. Selected applications to economic, recreational, and military situations.

Lec. Sec. 01 MW 3-4:15 F 1:30-2:20

550.472 (Q) GRAPH THEORY (4) Fishkind
Limit 40   Prereq: Linear Algebra
Study of systems of “vertices” with some pairs joined by “edges.” Theory of adjacency, connectivity, traversability, feedback, and other concepts underlying properties important in engineering and the sciences. Topics include paths, cycles, and trees; routing problems associated with Euler and Hamilton; design of graphs realizing specified incidence conditions and other constraints. Attention directed toward problem solving, algorithms, and applications. One or more topics taken up in greater depth.

Lec. Sec. 01 MWF 9-9:50 Th 3-3:50

550.600 DEPARTMENT SEMINAR Fill
Limit 50   A variety of topics discussed by speakers from within and outside the university. Required of all resident department graduate students.

Sec. 01 Th 3-4:50

550.621 PROBABILITY THEORY II Fill
Limit 45   Prereqs: 550.620, 110.405, or equivalents
Probability at the level of measure theory, focusing on limit theory. Modes of convergence, Poisson convergence, three-series theorem, strong law of large numbers, continuity theorems, central limit theory, Berry-Esseen theorem, infinitely divisible and stable laws.

Lec. Sec. 01 MW 3-4:15 F 3-3:50

550.631 STATISTICAL THEORY II Priebe
Limit 45   Prereq: 550.650
Advanced concepts and tools fundamental to research in mathematical statistics and statistical inference: asymptotic theory; optimality; various mathematical foundations.

Lec. Sec. 01 TTh 9-10:15 F 10-10:50

550.640 MACHINE LEARNING Younes
Limit 40   Prereq: 550.430
This course will focus on theoretical and practical aspects of statistical learning. We will review a collection of learning algorithms for classification and regression estimation, including linear methods, kernel methods, tree-based and boosting methods; we will also discuss unsupervised methods for linear and nonlinear data reduction and clustering. We will introduce fundamental concepts of the theory of model selection and validation: bias/variance dilemma, penalty methods, and some measures of complexity; the course will also include standard validation algorithms, like cross-validation and bootstrap.

Sec. 01 MW 3-4:15

550.643 GRAPHICAL MODELS Younes
Limit 50   Prereqs: 550.420 or equivalent, 550.430 or equivalent
This course describes how models
APPLIED MATHEMATICS AND STATISTICS

based on networks encoding the
conditional dependency structure
between random variables, also called
graphical models, can be used to design
multivariate probability distributions. A
special focus will be made on important
particular cases, like Markov Chains,
Bayesian networks or Markov Random
Fields. We will also discuss parametric
estimation and inference problems, and
issues arising when some of the
variables cannot be observed.

550.662 OPTIMIZATION ALGORITHMS
Han
Limit 45  Prereq: 550.661
Design and analysis of algorithms for
linear and nonlinear optimization. The
revised simplex method, the primal-
dual algorithm, algorithms for network
problems, first- and second-order
methods for nonlinear problems,
quadratic programming techniques,
and methods for constrained nonlinear
problems.

Sec. 01  Lec.  F 1:30-2:20
MWF 11-11:50

550.663 STOCHASTIC SEARCH AND
OPTIMIZATION Spall
Limit 30
Prerequisites: graduate course in
probability and statistics and knowledge
of basic matrix algebra
An introduction to stochastic search and
optimization, including discrete and
continuous optimization problems.
Topics will include the “no free lunch”
theorems, beneficial effects of injected
Monte Carlo randomness, algorithms
for global and local optimization
problems, random search, recursive
least squares, stochastic approximation,
simulated annealing, evolutionary
and genetic algorithms, machine
(reinforcement) learning, and statistical
multiple comparisons.

Sec. 01  T 1:30-3:20

550.672 GRAPH THEORY Fishkind
Limit 45  Prereq: Linear Algebra
An introduction to graph theory at the
graduate level. See 550.472 for course
description.

Sec. 01  Lec.  F 10-10:50
MWF 9-9:50

550.681 NUMERICAL ANALYSIS Han
Limit 45  Prereq: Multivariable
calculus, linear algebra, computing
experience; Coreq: 110.405
Mathematical formulation and analysis
of numerical algorithms. Brief review
of topics in elementary numerical
analysis such as floating-point
arithmetic, Gaussian elimination for
linear equations, interpolation and
approximation. Core topics to be
covered: numerical linear algebra
including eigenvalue and linear least-
squares problems, iterative algorithms
for nonlinear equations and leastsquares
problems, and convergence theory of
numerical methods. Other possible
topics: sparse matrix computations,
numerical solution of partial differential
equations, finite element methods, and
parallel algorithms.

Sec. 01  Lec.  F 3-3:50
MWF 12-12:50

550.700 MASTER'S RESEARCH
Reading, research, or project work for
master’s level students. Arranged
individually between students and
faculty.

Sec. 01  TBA

550.735 TOPICS IN STATISTICAL
PATTERN RECOGNITION Priebe
Limit 25  Prereq: 550.630 or equivalent
The Dissimilarity Representation for
Pattern Recognition. This course will
investigate aspects of statistical
inference and statistical pattern
recognition associated with observing
only dissimilarities between entities
rather than observing feature vectors
associated with the individual entities
themselves.

Sec. 01  TBA

550.790 TOPICS IN APPLIED
MATHEMATICS Abrams
Limit 25
Prereq: Linear Algebra
A survey of theory and techniques from
the cutting-edge field Computational
Topology, which emphasizes discrete
versions of ideas from algebraic
topology and differential topology,
including relevant computational
algorithms.

Sec. 01  TBA

550.800 DISSERTATION RESEARCH Staff
Limit 20 per section
Sec. 01 - TBA
Sec. 02 - TBA
Sec. 03 - TBA
Sec. 04 - TBA
Sec. 05 - TBA
Sec. 06 - TBA
Sec. 07 - TBA
Sec. 08 - TBA
Sec. 09 - TBA
Sec. 10 - TBA
BIOMEDICAL ENGINEERING

580.112 (E,N) BME DESIGN GROUP (3) Allen Perm. Req'd Limit 10 per section
A two-semester course sequence where freshmen work with groups of BME upperclassmen mentors, and learn to use engineering principles to solve design problems that are biological, physiological, and/or medical. Freshmen are expected to use the informational content being taught in calculus, physics, and chemistry and apply this knowledge to the solution of practical problems encountered in biomedical engineering.

580.202 BME IN THE REAL WORLD (1) Popel Limit 150
Open only to Engineering students
A series of weekly lectures to inform students about careers in biomedical engineering and to discuss technological, social, ethical, legal, and economic issues relevant to the profession. Topics include academic careers in biomedical engineering; biomedical engineering in industry (large corporations to sole entrepreneurs); health care delivery; ethical issues; legal issues (patenting, licensing, product liability); standards and government regulations; and economic issues in biomedical engineering industry (start-up companies, global businesses).

580.212 (E,N) BME DESIGN GROUP (3) Allen Limit 10 per section Sophomore-level version of 580.111-112. Permission of course directors required

580.222 (E) SYSTEMS AND CONTROLS (4) Miller/Vidal Limit 25 per section
Prereq: 110.201 (Linear Algebra), 110.302 (Differential Equations) or 550.291 (Linear Algebra and Differential Equations)
An introduction to linear systems: analysis, stability and control. Topics include first and second order systems, linear time invariant discrete and continuous systems, convolution, Fourier series, Fourier transforms, Laplace transform, stability of linear systems, input output and state space representation of linear systems, stability, observability, controllability, and PID controller design.

580.223 (E) MODELS AND SIMULATIONS (4) Popel/Winslow Limit 20 per section
Prereq: 110.201 (Linear Algebra), 110.302 (Differential Equations) or 550.291 (Linear Algebra and Differential Equations)
This course introduces students to modeling and analysis of biological systems. The first portion of the course focuses on linear systems. Topics include harmonic oscillators, pharmacokinetics, reaction-diffusion equation, heat transfer, and fluid flow. The second half of the course focuses on non-linear systems. Topics include iterated maps, bifurcations, chaos, stability of autonomous systems, the Hodgkin-Huxley model, fractals, limit cycles, and the Poincare-Henon theorem. The course also introduces students to the Matlab programming language, which allows them to implement the models discussed in class.

580.302 (E,S) CAREERS IN BIOMEDICAL ENGINEERING (1) Popel Limit 50 Junior/Senior Engineering majors only
See description for 580.202. This course is designed for upperclassmen that wish to meet with weekly speakers to discuss careers issues.
BIOMEDICAL ENGINEERING

580.312 (E,N)  BME DESIGN GROUP (3)  Allen  Permission of course directors required  Limit 5 per section
A two semester course sequence where juniors and seniors work with a team leader and a group of BME freshmen and sophomores, to solve open-ended problems in biomedical engineering. Upperclassmen are expected to apply their general knowledge and experience, and their knowledge in their concentration area, to teach lower classmen and to generate the solution to practical problems encountered in biomedical engineering.

580.412 (E)  BME DESIGN GROUP (3)  Allen  Permission of course directors required  Limit 5 per section
A senior-level version of 580.311-312

580.414 (E)  DESIGN TEAM/TEAM LEADER (4)  Allen  Prior design team experience and permission of course directors required. Limit 5 per section
A two-semester sequence where leaders direct a team of undergraduate biomedical engineering students in a series of design problems.

580.422 (E,N)  SYSTEMS BIOENGINEERING II (4)  Wong  Limit 24 per section
Prereq: 580.221 (Molecules and Cells), 580.222 (Systems and Controls), 580.223 (Models and Simulations), 110.302 (Differential Equations), 580.421 (Physiological Foundations I). Coreq: 580.424 (Physiological Foundations Laboratory II). A quantitative, model-oriented approach to the study of the nervous system. Topics include functional anatomy of the central and autonomic nervous systems, neurons and networks, learning and memory, structure and function of the auditory and visual systems, motor systems, and neuro-engineering.

580.434 (E)  BIOELECTRICITY (2)  Tung  Limit 20  Prereq: 580.421  Recommended: 520.213
Topics will include dielectric properties of biological tissues, electromanipulation of cells, electrical simulation, defibrillation, impedance imaging, standards for electromagnetic field exposure, and electrical safety. Special emphasis will be placed on theoretical concepts and experimental approaches used to characterize the bioelectrical properties of cardiac muscle.

580.448 (E,N)  BIOMECHANICS OF CELLS AND ORGANISMS (3)  Sun/Spector  Limit 20
Prereq: 171.101-102 (Intro. Physics), 110.108-110.109 (Calculus I and II) and 110.202 (Linear Algebra)  Mechanical aspects of the cell are introduced using the concepts in continuum mechanics. Discussion of the role of proteins, membranes and cytoskeleton in cellular function and how to describe them by using simple mathematical models.

580.452 (E,N)  CELL AND TISSUE ENGINEERING LAB (2)  Haase  Limit 8 per section
Lab Fee. This laboratory course will consist of three experiments that will provide students with valuable hands-on experience in cell and tissue engineering. Experiments include the basics of cell culture techniques, gene transfection and metabolic engineering, basics of cell-substrate interactions I, cell-substrate interactions II, and cell encapsulation and gel contraction.

580.470 (E,N) (W)  BIOMEDICAL INSTRUMENTATION I: MOLECULAR AND CELLULAR (3)  Shaker  Prereq: 520.345  Senior/Grad students only, juniors with permission
This core design course will explore the fundamentals of molecular and cellular measurements, related technologies and their applications in scientific research.
BIOMEDICAL ENGINEERING

580.472 (E) **MEDICAL IMAGING SYSTEMS (3)**
Prince  Limit 30  Prereq: 520.214
An introduction to the physics, instrumentation, and signal processing methods used in general radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images. Cross-listed with Neuroscience and Co-listed with Electrical and Computer Engineering (520.472)
Sec. 01  MWF 10-10:50

580.481 (E,Q) **COMPUTER VISION (3)**
Vidal  Limit 30  Prereq: 110.201, 110.302
This course gives an overview of fundamental methods in computer vision from a computational perspective. Methods include computation of 3-D geometric constraints from binocular stereo, motion, texture, shape-from-shading, and photometric stereo. Edge detection and color perception are studied as well. Elements of machine vision and biological vision are also included. Co-listed as 600.461
Sec. 01  MW 1:30-2:45

580.491 (E) **LEARNING THEORY (3)**
Shadmehr  Limit 20  Prereq: 110.201 (Linear Algebra), 110.302 (Differential Equations) or 550.291 (Linear Algebra and Differential Equations) The course introduces the probabilistic foundations of learning theory. We will discuss topics in regression, estimation, optimal control, system identification, Bayesian learning, and classification. Our aim is to first derive some of the important mathematical results in learning theory, and then apply the framework to problems in biology, particularly animal learning and control of action.
Sec. 01  MW 4:30-5:45pm

580.502 **FRESHMEN/SOPHOMORE RESEARCH**
Staff  Practicum in Biomedical Engineering Research projects or engineering design projects under the supervision of any member of the BME faculty.

580.512 **FRESHMEN/SOPHOMORE INDEPENDENT STUDY**
Directed readings or other literature research under the direction of any member of the BME faculty.

580.532 **JUNIOR/SENIOR RESEARCH**
Research projects or engineering design projects under the supervision of any member of the BME faculty.

580.542 **JUNIOR/SENIOR INDEPENDENT STUDY**
Directed readings or other literature research under the direction of any BME faculty member.

580.580 **SENIOR DESIGN PROJECT**
Fern King  Allen  Independent or team design project to design and evaluate a system. The design should demonstrate creative thinking and experimental skills, and must draw upon advanced topics of biomedical and traditional engineering. Project proposal and permission of Dr. Robert Allen required and must be approved by 2/8/08.
Sec. 01  TBA

580.610 **COMPUTATIONAL FUNCTIONAL GENOMICS**
Pretsious  Limit 45  Co-listed as 520.610

580.630 **THEORETICAL NEUROSCIENCE**
Staff  Limit 20
Sec. 01  MW 8:30-9:45

580.670 **BIOMEDICAL INSTRUMENTATION I: MOLECULAR AND CELLULAR**
Thakor  Limit 20  Senior/Grad students only, Juniors with permission
Sec. 01  Th 4-5-50pm  F 2-3-50

580.672 **BIOSENSING AND BIOMEMS**
J. Wang  Limit 15
Sec. 01  MW 11-12:15

580.691 **LEARNING THEORY**
Shadmehr  Limit 30
Sec. 01  TTh 4:30-5:45pm

580.802 **RESEARCH IN BIOMEDICAL ENGINEERING**
Staff  Directed research for MSE and PhD students.
CHEMICAL AND BIOMOLECULAR ENGINEERING

540.203 (E)  ENGINEERING THERMODYNAMICS (3) Frechette
Limit 145  Prereq: 110.202; Coreq: 030.102, 171.101
Formulation and solution of material, energy, and entropy balances with an emphasis on open systems. A systematic problem-solving approach is developed for chemical and biomolecular process-related systems. Extensive use is made of classical thermodynamic relationships and constitutive equations for one and two component systems. Applications include the analysis and design of engines, refrigerators, heat pumps, compressors, and turbines.

540.301 (E)  KINETIC PROCESSES (4) Hanes
Limit 100  Prereqs: 540.203, 540.303
Review of numerical methods applied to kinetic phenomena and reactor design in chemical and biological processes. Homogeneous kinetics and interpretation of reaction rate data. Batch, plug flow, and stirred tank reactor analyses, including reactors in parallel and in series. Selectivity and optimization considerations in multiple reaction systems. Non isothermal reactors. Elements of heterogeneous kinetics, including adsorption isotherms and heterogeneous catalysis. Coupled transport and chemical/biological reaction rates.

540.303 (E,N)  TRANSPORT PHENOMENA I (4)
Limit 145  Coreq: Differential Equations
Introduction to the field of transport phenomena. Molecular mechanisms of momentum transport (viscous flow), energy transport (heat conduction), and mass transport (diffusion). Isothermal equations of change (continuity, motion, and energy). The development of the Navier Stokes equation. The development of non isothermal and multi component equations of change for heat and mass transfer. Exact solutions to steady state, isothermal unidirectional flow problems, to steady state heat and mass transfer problems. The analogies between heat, mass, and momentum transfer are emphasized throughout the course.

540.314 (E)  CHEMICAL ENGINEERING PROCESS DESIGN (4) Katz/Dahuron
Limit 25 per section  Prereq: 540.311 or 540.313, 540.301 and 540.306
This course guides the student through the contrasting aspects of product design and of process design. Product design concerns the recognition of customer needs, the creation of suitable specifications, and the selection of best products to fulfill the needs. Process design concerns the quantitative description of processes, which serve to produce many commodity chemicals, the estimation of process profitability, and the potential for profitability improvement through incremental changes in the process. Students work in small teams to complete a major project demonstrating their understanding of and proficiency in the primary objectives of the course. Students report several times both orally and in writing on their accomplishments.

540.404 (E)  THERAPEUTIC AND DIAGNOSTIC COLLOIDS (3) Hanes/ Wirtz
Limit 50
The inefficient or inappropriate transport of particles in complex biological fluids in the body currently limits the effectiveness of nanoparticle-based strategies aimed at providing a variety of breakthroughs in medicine, from highly targeted drug and gene delivery systems to improved particles for advanced imaging and diagnostics. Many bodily fluids serve as barriers to particle transport to desired locations, and some are microporous, highly viscous and/or elastic in nature. This course seeks to provide a
fundamental understanding of the phenomena, including fluid micro-, meso- and macro rheology, that governs nano- and microparticle transport in important biological fluids, including the blood, airways, mucus, and living cells. A comparison of macroscopic and microscopic particle transport behavior, including comparisons of ensemble average transport behavior to that of individual particle behavior, is a common thread that runs throughout the course. The importance of particle physicochemical properties in achieving desired particle transport through biological barriers to desired sites of action will be addressed. The course will include a case study involving the design criteria of efficient synthetic systems for gene delivery in the lung airways. 

540.406  MOLECULAR SIMULATIONS AND MULTISCALE MODELING (3)  Drazer/Gray  Limit 30  
This course provides an introduction to modern numerical methods for calculating thermodynamics, transport and structural properties of complex systems in chemical and biomolecular engineering. The first part of the course will focus on molecular level simulations, from ab initio methods to Molecular Dynamics and Monte Carlo simulations, their applications and limitations. The second part of the course will emphasize the need of multiscale models to address the multiplicity of length and time scales present in complex systems. Mesoscopic models will be investigated as a first step into multiscale models. Then, current methods to bridge the gap between atomistic simulations and macroscopic methods will be presented in case studies.

360.404 (E)  INTERFACIAL PHENOMENA IN NANOSTRUCTURED MATERIALS  Sekeracer/Frechette  Limit 25  
All materials properties of materials change when encountered or fabricated with nanoscale structure. In this class, we will examine how the properties of nanostructured materials differ from their macroscopic behavior, primarily due to the presence of large interfacial areas relative to the characteristic volume scale. General topics include the structure of nanostructured materials (characterization and microscopy), thermodynamics (effects of high curvatures and surface elasticity), kinetics and phase transformations (diffusion and morphological stability), and electronic properties (quantum confinement and effects of dimensionality). Cross-listed with Materials Science and Interdepartmental. Same as 360.644

540.433  ENGINEERING ASPECTS OF CONTROLLED DRUG DELIVERY  (3)  Hanes  Prereq: Transport Phenomena course (such as 540.303 or 580.461) and Kinetic Processes course (such as 540.301). Otherwise, permission may be given in special cases by instructor  
This course addresses the fundamental engineering behind the development and understanding of controlled drug delivery systems. Focus is placed on the encapsulation and delivery of therapeutic proteins and genes from polymeric devices due to their increasing prevalence and importance in pharmaceutical products. Routes of drug delivery to be covered include oral, transdermal, pulmonary, injection, and surgical implantation. Topics include biological barriers to drug delivery, drug pharmacokinetics, particle targeting via receptor-ligand interactions, intracellular transport of colloidal particles and synthetic gene delivery vectors.

540.440 (E)  MICRO & NANO TECHNOLOGY (3)  Gracias  Limit 30  
Prereq: An undergraduate course in Biochemistry and/or Cell Biology. This course provides details of the latest advances in cellular and molecular biology for mammalian systems, with special implications for biotechnology. Topics covered include tissue organization, gene expression, signal transduction, immunology, proteomics, genomics, and post-translational processing. Special emerging areas in biotechnology involving mammalian cells will be described including nanobiotechnology for mammalian cells,
CHEMICAL AND BIOMOLECULAR ENGINEERING

metabolic and cellular engineering, stem cell therapies, and tissue engineering. Same course as 540.640

540.442 (E) ADVANCED TOPICS IN BIOCHEMICAL KINETICS (3) Betenbaugh/Ostermeier/Hanes Limit 40 Survey of kinetic/reactor phenomena of high relevance to industry and cutting-edge biomolecular engineering research. Topics to be covered include: reactions with phase changes for the microelectronics industry, computational modeling of complex multiple reaction systems, enzyme kinetics (including inhibition, allostery and cooperativity), pharmacokinetics, cell bioreactors, and intracellular kinetics relevant to metabolic engineering.

540.460 (E) DESIGN OF BIOLOGICAL MOLECULES AND SYSTEMS (3) Ostermeier/Gray Limit 20 Prereq. 020.305 & 020.306 or permission of instructor. Current research problems in biomolecular engineering will be used to illustrate principles in the design of biomolecules (i.e. protein engineering, RNA/DNA engineering), metabolic pathways, signaling pathways, genetic circuits and complex biological systems including cells. Emphasis will be placed on experimental approaches to design (especially those approaches that employ the principles of evolution).

540.502 INDEPENDENT STUDY

540.522 INDEPENDENT RESEARCH

540.601 CHEMICAL ENGINEERING SEMINAR Gray Limit 75

540.604 THERAPEUTIC AND DIAGNOSTIC COLLOIDS Hanes/ Wirtz Limit 50 See 540.404 for description Same course as 540.404

540.606 MOLECULAR SIMULATIONS AND MULTISCALE MODELING Drazer/Gray Limit 30 This course provides an introduction to modern numerical methods for calculating thermodynamics, transport and structural properties of complex systems in chemical and biomolecular engineering. The first part of the course will focus on molecular level simulations, from ab initio methods to Molecular Dynamics and Monte Carlo simulations, their applications and limitations. The second part of the course will emphasize the need of multiscale models to address the multiplicity of length and time scales present in complex systems. Mesoscopic models will be investigated as a first step into multiscale models. Then, current methods to bridge the gap between atomistic simulations and macroscopic methods will be presented in case studies.

540.640 MICRO & NANOTECHNOLOGY Graue LIMIT 50 Micro/Nanotechnology is the field of fabrication, characterization and manipulation of extremely small objects (dimensions on the micro to nanometer length scale). Microwe objects, because of their small size are expected to be at the frontier of technological innovation for the next decade. This course will include a description of the materials used in micro/nanotechnology, methods employed to fabricate nanoscale objects, techniques involved in characterizing and exploiting the properties of small structures, and examples of how this technology is revolutionizing the areas of Electronics & Medicine. Same class as 540.440

540.642 ADVANCED TOPICS IN BIOCHEMICAL KINETICS Betenbaugh/Hanes/Ostermeier Limit 15 Survey of kinetic/reactor phenomena of high relevance to industry and cutting-edge biomolecular engineering research. Topics to be covered include: reactions with phase changes for the microelectronics industry, computational modeling of complex multiple reaction systems, enzyme kinetics (including inhibition, allostery and cooperativity), pharmacokinetics, cell bioreactors, and intracellular kinetics relevant to metabolic engineering.

360.644 INTERFACIAL PHENOMENA IN NANOSTRUCTURED MATERIALS Erlebacher/Frechette Limit 25 All materials properties of materials
CHEMICAL AND BIOMOLECULAR ENGINEERING

- change when encountered or fabricated with nanoscale structure. In this class, we will examine how the properties of nanostructured materials differ from their macroscopic behavior, primarily due to the presence of large interfacial areas relative to the characteristic volume scale. General topics include the structure of nanostructured materials (characterization and microscopy), thermodynamics (effects of high curvatures and surface elasticity), kinetics and phase transformations (diffusion and morphological stability), and electronic properties (quantum confinement and effects of dimensionality). Cross-listed with Materials Science and Interdepartmental. Same as 360.404

540.660 DESIGN OF BIOLOGICAL MOLECULES AND SYSTEMS
Ostermeier/Gray

- Prereq: 020.305 & 020.306 or permission of instructor. Current research problems in biomolecular engineering will be used to illustrate principles in the design of biomolecules (e.g. protein engineering, RNA/DNA engineering), metabolic pathways, signaling pathways, genetic circuits and complex biological systems including cells. Emphasis will be placed on experimental approaches to design (especially those approaches that employ the principles of evolution). Graduate level of 540.460

540.801 GRADUATE RESEARCH

540.811 INDEPENDENT STUDY

CIVIL ENGINEERING

560.141 (E,N) PERSPECTIVES ON THE EVOLUTION OF STRUCTURES (3) Schaefer

- Sec. 01 TTh 1:30-2:45 Lab

560.202 (E,N) DYNAMICS (4) Graham-Brady

- Sec. 01 TTh 10:30-11:45 F 2:30–5:20

560.206 (E) SOLID MECHANICS AND THEORY OF STRUCTURES (4) Herman

- Sec. 01 TTh 1:30-2:45 Lab

560.320 (E) STEEL STRUCTURES (3) Herman

- Sec. 01 TTh 9-10:15

560.330 (E) FOUNDATION DESIGN (3) Anandrajiah

- Sec. 01 MW 3–4:15

560.350 (E) DESIGN AND SYNTHESIS (3) Mettam

- Sec. 01 Th 1:30-2:40
CIVIL ENGINEERING

560.380 (E)  INTRODUCTION TO OCEAN AND WIND ENGINEERING (3)  Shen  Limit 30
Prerequisite: 560.351 Introduction to Fluid Mechanics. Fundamentals of hydrodynamics, aerodynamics and flow-structure interactions with applications in coastal/ocean engineering and wind engineering. Topics include wind and current past blunt bodies, flow-induced structure vibrations, ocean waves and wave/flood loads, wind field and wind loads, and model testing.

Sec. 01  TTh 10:30-11:45

560.435 (E)  PROBABILITY AND STATISTICS IN CIVIL ENGINEERING (3)  Igusa  Limit 80  Prereq: 110.109
Development and applications of the analysis of uncertainty, including basic probability, statistics and decision theory, in civil engineering areas of soil mechanics, structures, transportation and water resources.

Sec. 01  MW 12-1:15

560.492 (E)  SEMINAR IN CIVIL ENGINEERING - JUNIORS (3)  Herman  Seminar series of speakers on various aspects of civil engineering. Juniors in Civil Engineering are expected to enroll in this sequence. Different speakers are invited each semester.

Sec. 01  T 4:30-5:45pm

560.494 (E)  SEMINAR IN CIVIL ENGINEERING - SENIORS (3)  Herman  Seminar series of speakers on various aspects of civil engineering. Seniors in Civil Engineering are expected to enroll in this sequence. Different speakers are invited each semester.

Sec. 01  T 4:30-5:45pm

560.526  INDEPENDENT STUDY IN CIVIL ENGINEERING

560.536  RESEARCH IN CIVIL ENGINEERING

560.692  CIVIL ENGINEERING SEMINAR - GRADUATE STUDENTS  Herman

560.782  HYDRODYNAMICS  Shen  Limit 15  Fundamentals of fluid mechanics in the context of ocean science and engineering, naval architecture, and coastal processes, at engineering scales.

Sec. 01  TTh 9-10:15

560.786  STRUCTURAL RELIABILITY  Schafer  Prereq: 560.435 Reliability theory and its application to problems in civil engineering (primarily structural) design and analysis. The course will include some review of probability theory, statistics and the theory of stochastic processes/fields, second moment methods along with first and second order reliability approaches. Probabilistic modeling of loads is considered. Component-wise measures of reliability are investigated as a gateway to the theory, but maximization of structural system reliability is the overall objective of the class. The relationship of the theory of reliability to structural design codes is discussed.

Sec. 01  TTh 9-10:15

560.787  STRUCTURAL OPTIMIZATION  Guest  Limit 30  Introduction to structural optimization with focus on topology optimization using finite element methods. Applications to design of structural and mechanical systems and use of inverse homogenization to design material microstructures that yield extreme/prescribed properties.

Sec. 01  MW 5-6:30pm

560.836  GRADUATE RESEARCH
Sec. 01 – Staff
Sec. 02 – Dalrymple
Sec. 05 – McCormick
Sec. 08 – Schafer
Sec. 09 – Anandarajah
Sec. 10 – Brady
Sec. 11 – Igusa
Sec. 13 – Arwade
Sec. 14 – Shen
Sec. 15 – Guest

COMPUTER SCIENCE

600.102 (E)  COMPUTER SCIENCE FOUNDATIONS (4)  Froehlich
Limit 15 per section  Prereq: 600.101 or equiv. knowledge. This course is an introduction to computer science for majors and non-majors. Students are exposed to the discipline through vignettes of logic and algebra, computer systems and networks, algorithms, programming languages, computation theory, and selected applications. CS majors can only take this course in their first year of CS coursework.

Sec. 01  T 12-12:50
Sec. 02  Th 12-12:50

600.104 (H)  COMPUTER ETHICS (1)  Kosaraju
Limit 20  Computer Science majors only  Note: Meets every other week. Students will examine a variety of topics regarding policy, legal, and moral issues related to the computer science profession itself and to the proliferation of computers in all aspects of society, especially in the
COMPUTER SCIENCE

era of the Internet. The course will cover various general issues related to ethical frameworks and apply those frameworks more specifically to the use of computers and the Internet. The topics will include privacy issues, computer crime, intellectual property law -- specifically copyright and patent issues, globalization, and ethical responsibilities for computer science professionals. Work in the course will consist of weekly assignments on one or more of the readings and a final paper on a topic chosen by the student and approved by the instructor.

600.107 (E)  INTRODUCTION TO PROGRAMMING IN JAVA (3)
Houlahan  Limit 120  Prereq: familiarity with computers  This course introduces the fundamental programming concepts and techniques in Java and is intended for all who plan to use computer programming in their studies and careers. Topics covered include control structures, arrays, functions, recursion, dynamic memory allocation, simple data structures, files, and structured program design. Elements of object-oriented design and programming are also introduced. Students without prior exposure are strongly advised to also take 600.108.

Sec. 01    MW 3-4:15

600.108 (E)  INTRODUCTION TO PROGRAMMING LAB (1)
Houlahan  Limit 12 per section  Coreq: 600.107  Satisfactory/Unsatisfactory only
The purpose of this course is to give novice programmers extra hands-on practice with guided supervision. Students will work in pairs each week to develop working programs, with checkpoints for each development phase.

Sec. 01 02 03    W 6-8:50pm

600.120 (E)  INTERMEDIATE PROGRAMMING (4)
Froelich  Limit 20 per section  Prereq: 600.107 or 600.109.  This course covers intermediate to advanced programming in both C and C++. The focus of the course is on low level programming techniques and implementations. Students are expected to learn syntax and low-level language features independently. Coursework involves significant programming projects in both languages.

Sec. 01 02 03 04    MWF 3-3:50

600.211 (E)  UNIX SYSTEMS PROGRAMMING (3)
Froelich  Limit 40  Prereq: 600.120  This course covers a variety of topics in UNIX programming, including process control, signal handling, daemon processes, and interprocess communication. Participants must be familiar with using the UNIX environment and be fluent in the C programming language.

Sec. 01    MWF 10-10:50

600.226 (E,Q)  DATA STRUCTURES (3)
Houlahan  Limit 100  Prereq: 600.107  This course covers the design and implementation of data structures including arrays, stacks, queues, linked lists, binary trees, heaps, balanced trees (e.g. 2-3 trees, AVL-trees) and graphs. Other topics include sorting, hashing, memory allocation, and garbage collection. Course work involves both written homework and Java programming assignments.

Sec. 01 02    MWF 12-1:15

600.318 (E)  OPERATING SYSTEMS (4)
Steffen/  Limit 30  Prereq: 600.120, 600.226, 600.333, 600.211  Students may receive credit for 600.318 or 600.418 but not both.  This course covers fundamental topics related to operating systems theory and practice. Topics include processor management, storage management, concurrency control, multi-programming and processing, device drivers, operating system components (e.g., file system, kernel), modeling and performance measurement, protection and security, and recent innovations in operating system structure. Course work includes the implementation of operating systems techniques and routines, and critical parts of a small but functional operating system.

Sec. 01    MWF 10-10:50

600.325 (E)  DECLARATIVE METHODS (3)
Eisner  Limit 30  Prereq: 600.226 & 600.271 & Calculus II  Students get credit for 600.325 or 600.425, not both
Suppose you could simply write down a description of your problem, and let the computer figure out how to solve it. What notation could you use? What strategy should the computer then use? In this survey class, students learn to recognize when your problem is a special case of satisfiability, integer programming, rational pattern transduction, Bayesian network inference, or weighted logic programming. For each of these paradigms, students learn to reformulate hard problems in the required notation and apply off-the-shelf software that can solve

Sec. 01    MWF 3-3:50
any problem in that notation -- including many of the problems found in other courses and in the real world. Students also gain some understanding of the general-purpose algorithms that power the software. **[Analysis]**

**600.335 (E) ARTIFICIAL INTELLIGENCE (3)**
Shipman Limit 30 Prereq: 600.226; 550.171; Recommended: Linear Algebra, Prob/Stat Students may receive credit for 600.335 or 600.435, not both. Artificial intelligence (AI) is introduced by studying knowledge representation mechanisms, automated reasoning, automatic problem solvers and planners, production systems, game playing and machine learning. The class is recommended for all scientists and engineers with a genuine curiosity about the fundamental obstacles to getting machines to perform tasks such as deduction, learning, and planning and navigation. **[Applications]**

Sec. 01 MWF 10:10-10:50

**600.337 (E) DISTRIBUTED SYSTEMS (3)**
duir Limit 30 Prereq 600.120, 600.226; 600.211 recommended. Students may receive credit for 600.337 or 600.437, but not both. This course teaches how to design and implement protocols that enable processes to exchange information, cooperate, and coordinate efficiently in a consistent manner over a computer network. Topics include communication protocols, group communication, distributed databases, distributed operating systems, and security. **[Systems]**

Sec. 01 MW 3:4-4:15

**600.344 (E) COMPUTER NETWORK FUNDAMENTALS (3)**
Jeavons Limit 60 Prereq 600.333 or 600.435 or Perm Req'd Students may receive credit for 600.344 or 600.444 but not both. This course considers intrasystem communications issues. Topics covered include layered network architectures, the OSI model, bandwidth, data rates, modems, multiplexing, error detection/correction, switching, queuing models, circuit switching, packet switching, performance analysis of protocols, local area networks, and congestion control.

Sec. 01 TTh 12:1-1:15

**600.357 (E,Q) COMPUTER GRAPHICS (3)**
Kazhdan Limit 20 Prereq 600.120, 600.226, linear algebra. or Perm Req'd Students may receive credit for 600.357 or 600.457, but not both. This course introduces computer graphics techniques and applications, including image processing, rendering, modeling and animation. **[Applications]**

Sec. 01 MWF 11:11-11:50

**600.361 (E,Q) COMPUTER VISION (3)**
Vidal Limit 30 Prereq 600.120, 600.226, linear algebra. or Perm Req'd Students may receive credit for 600.361 or 600.461, but not both. This course gives an overview of fundamental methods in computer vision from a computational perspective. Methods include computation of 3-D geometric constraints from binocular stereo, motion, texture, shape-from-shading, and photometric stereo. Edge detection and color perception are studied as well. Elements of machine vision and biological vision are also included. **[Applications]**

Sec. 01 MWF 1:30-2:45

**600.402 (E) MEDICAL INFORMATICS (1)**
Lehmann Course discusses some of the new entities—the computer-based patient record, clinical practice guidelines, and digital libraries—and their underlying technologies: networks, databases, controlled vocabularies, and decision analysis. Short course meets 03/24/08 – 04/16/08

Sec. 01 MWF 4:30-5:45pm

**600.418 (E) OPERATING SYSTEMS (3)**
Devinchi/Sridhar Limit 10 Prereq 600.226, 600.333-334, Graduate level version of 600.318. Students may receive credit for 600.318 or 600.418 but not both. **[Systems]**

Sec. 01 MWF 10:10-10:50

**600.425 (E) DECLARATIVE METHODS (3)**
Esser Limit 30 Prereq: 600.226, 600.271 and Calculus II. Graduate level version of 600.325. Students may receive credit for 600.325 or 600.425, not both. **[Analysis]**

Sec. 01 MW 3:3-4:50

**600.426 (E,Q) PROGRAMMING LANGUAGES (3)**
Smith No Freshmen and Sophomores Limit 30 Prereq: 600.226. Functional, object-oriented, and other language features are studied independent of a particular programming language. Students become familiar with these features by implementing them. Most of the implementations are in the form of small
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language interpreters. Some type checkers and a small compiler will also be written. The total amount of code written will not be overly large, as the emphasis is on concepts. The ML programming language is the implementation language used. [Analysis]

600.435 (E) ARTIFICIAL INTELLIGENCE (3) Sheppard Limit 10 plus CS Grads Prereq: 600.226, 550.171 Recommended: Linear Algebra, Prob/Stats Graduate level version of 600.335. Students may receive credit for 600.335 or 600.435, but not both. [Applications] Sec. 01 MWF 10-10:50

600.437 (E) DISTRIBUTED SYSTEMS (3) Amir Limit 20 Graduate version of 600.337. Students may receive credit for 600.337 or 600.437, but not both. [Systems] Sec. 01 MW 3-4:15

600.444 (E) COMPUTER NETWORKS (3) Terzis Limit 60 plus CS Grads Prereq: 600.333 or 600.433 or Perm. Req'd. Graduate level version of 600.344. Students may receive credit for 600.344 or 600.444 but not both. [Systems] Sec. 01 TTh 12-1:15

600.446 (E) COMPUTER INTEGRATED SURGERY II (3) Taylor Limit 20 plus CS Grads Prereq: 600.445 or Perm. Req'd. This weekly lecture/seminar course addresses similar material to 600.445, but covers selected topics in greater depth. In addition to material covered in lectures/seminars by the instructor and other faculty, students are expected to read and provide critical analysis/presentations of selected papers in recitation sessions. Students taking this course are required to undertake and report on a significant term project under the supervision of the instructor and clinical end users. Typically, this project is an extension of the term project from 600.445, although it does not have to be. Grades are based both on the project and on classroom recitations. Students wishing to attend the weekly lectures in a 1-credit seminar should sign up for 600.452. Students may also take this course as 600.464. The only difference between 600.446 and 600.464 is the level of project undertaken. Typically, 600.464 projects require a greater degree of mathematical, image processing, or modeling background. Prospective students should consult with the instructor as to which course number is appropriate. Students may receive credit for 600.446 or 600.464, but not both. [Applications] Sec. 01 TTh 1:30-2:45

600.452 (E) COMPUTER INTEGRATED SURGERY SEMINAR (1) Taylor Limit 30 Lecture only version of 600.446 (no project). Prereq: 600.445 or Perm Req'd. Students may receive credit for 600.446 or 600.452, but not both. Sec. 01 TTh 1:30-2:45

600.457 (E,Q) COMPUTER GRAPHICS (3) Kazhdan Limit 10 plus CS grads Prereq: 600.120, 600.226, linear algebra or Perm. Req'd. Graduate level version of 600.357. Students may receive credit for 600.357 or 600.457, but not both. [Applications] Sec. 01 MWF 11-11:50

600.461 (E) COMPUTER VISION (3) Vidal Limit 20 Prereq: 600.226 Graduate version of 600.361. Students may receive credit for 600.361 or 600.461, but not both. [Applications] Co-listed as 580.481 Sec. 01 MW 1:30-2:45

600.464 (E,Q) RANDOMIZED ALGORITHMS (3) Korula Limit 30 Prereq: 600.363 or 600.463 Students may receive credit for 600.464 or 600.664, but not both. Selected topics in algorithm design and analysis such as advanced data structures, amortization, graph algorithms, algebraic complexity, network flow, circulations, matching, randomization. [Analysis] Sec. 01 TTh 1:30-2:45

600.466 (E) INFORMATION RETRIEVAL AND WEB AGENTS (3) Harwicy Limit 60 Prereq: 600.226 An in-depth, hands-on study of current information retrieval techniques and their application to developing intelligent WWW agents. Topics include a comprehensive study of current document retrieval models, mail/news routing and filtering, document clustering, automatic indexing, query expansion, relevance feedback, user modeling, information visualization and usage pattern analysis. In addition, the course explores the range of additional language processing steps useful for template filling and information extraction. Sec. 01 TTh 3-4:15
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from retrieved documents, focusing on recent, primarily statistical methods. The course concludes with a study of current issues in information retrieval and data mining on the World Wide Web. Topics include web robots, spiders, agents and search engines, exploring both their practical implementation and the economic and legal issues surrounding their use.

[Applications]

600.472 (E, Q) THEORETICAL CRYPTOGRAPHY
(I) Hohenberger  Limit 40  Prereq: 600.471 recommended. The focus of this course is on the definitions and constructions of various cryptographic primitives and protocols, such as one-way functions, pseudo-random generators, digital signature schemes, encryption schemes, zero-knowledge and multiparty computation. We will study how to formulate definitions that capture desired security properties as well as techniques for designing and then proving that a construction realizes these properties. Students should be comfortable with the basics of number theory and proof writing.

[Analysis]

600.492 (E) COMPUTER SCIENCE WORKSHOP II
Perm. Req’d
Note: When registering please use the following faculty section numbers:
Sec. 01 Masson
02 Kaporu
03 Awerbuch
04 Taylor
05 Smith
06 Houdouan
07 Lehmann
08 Shepard
09 Hager
10 Chirkjian
11 Khubchandani
12 Anirudh
13 Tarunsky
14 Cowan
15 Burns
16 Eisner
17 Shapiro
18 Houdouan
19 Karchin
20 Arvind
21 Rubin
22 Monroe
23 Terzo
24 Schenorman
25 Winslow
26 Kachan
27 Jelinek
28 Friedlich
29 Staley
30 Ratanadees

600.502 INDEPENDENT STUDY - FRESHMEN & SOPHOMORES
Note: When registering please use faculty section numbers listed under 600.492

600.504 INDEPENDENT STUDY – JUNIORS & SENIORS
Note: When registering please use faculty section numbers listed under 600.492

600.508 UNDERGRADUATE RESEARCH
Note: When registering please use faculty section numbers listed under 600.492

600.510 COMPUTER SCIENCE INTERNSHIP
Note: When registering please use faculty section numbers listed under 600.492 Individual work in the field with a learning component, supervised by a faculty member in the department. The program of study must be worked out in advance between the student and the faculty member involved. Students may not receive credit for work that they are paid to do. Typically, 40 hours of work is equivalent to one credit, which is the limit per semester.

600.520 SENIOR HONORS THESIS
Note: When registering please use faculty section numbers listed under 600.492 For computer science majors only, a continuation of 600.519.

600.546 (E) SENIOR THESIS IN COMPUTER INTEGRATED SURGERY
(0-4) Taylor  Prereq: 600.445 & Perm. Req’d.

600.602 COMPUTER SCIENCE SEMINAR
Staff  Limit 200  Required for all CS grad students

600.625 COMPUTER AND NETWORK FORENSICS
Monrose  Limit 25  Prereq: Operating Systems and Systems Programming This course exposes students to a myriad of fundamental concepts and techniques for recovering and
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inferring information in computer systems and networks. Topics include (but are not limited to) file system forensics, kernel-level rootkits and associated challenges, reconstructing malware evolution and dynamics, analysis of anonymization and privacy preserving techniques, advanced network traceback, traffic classification, biometrics and digital evidence, data integrity and audit trails, secure remote logging, and system call introspection. A semester-long course project is required. Students will also be responsible for presenting and discussing selected research papers on topics pertinent to the course. Some familiarity with low-level system programming is assumed. [Applications] Cross-listed with JHUISI

600.642 ADVANCED TOPICS IN CRYPTOGRAPHY Ateniese Limit 20 Prereq: 600.442 or 600.443 This course will focus on advanced cryptographic protocols with an emphasis on open research problems. [Applications] Cross-listed with JHUISI Sec. 01 TTh 3-4:15

600.643 ADVANCED TOPICS IN COMPUTER SECURITY Rubin Limit 20 Prereq: either 600.424 or 600.443 Topics will vary from year to year, but will focus mainly on network perimeter protection, host-level protection, authentication technologies, intellectual property protection, formal analysis techniques, intrusion detection and similarly advanced subjects. Emphasis in this course is on understanding how security issues impact real systems, while maintaining an appreciation for grounding the work in fundamental science. Students will study and present various advanced research papers to the class. There will be homework assignments and a course project. [Systems or Applications] Cross-listed with JHUISI Sec. 01 MW 1:30-2:45

600.646 COMPUTER INTEGRATED SURGERY II Taylor Limit 30 Prereq: 600.445 or Perm. Req’d Students may receive credit for 600.446 or 600.646, but not both. Advanced version of 600.446. [Applications] Cross-listed with JHUISI Sec. 01 TTh 1:30-2:45

600.647 ADVANCED TOPICS IN WIRELESS NETWORKS Awerbuch Limit 30 Prereq: 600.344/444, 600.363/463 or Perm. Req’d A survey of current research in wireless communication networks. These types of networks have been growing exponentially in the past several years and include a host of different network types: ad hoc, cell phone, access point, sensor, etc. The class will build understanding of all layers of wireless networking and the interactions between them (including: physical, data link, medium access control, routing, transport, and application). Topics discussed: security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks. [Systems or Analysis] Co-listed as 520.647 Sec. 01 MW 12-1:15

600.664 RANDOMIZED ALGORITHMS Kosaraju Limit 30 Prereq 600.363 or 600.463 Students may receive credit for 600.464 or 600.664, but not both. Graduate level version of 600.464. [Analysis] Sec. 01 TTh 1:30-2:45

600.666 INFORMATION EXTRACTION FROM SPEECH AND TEXT Khudanpur Limit 30 Prereq: 600.120 & 550.310 or equivalent, expertise in C or C++ programming Introduction to statistical methods of speech recognition (automatic transcription of speech) and understanding. The course is a natural continuation of 600.465 but is independent of it. Topics include elementary information theory, hidden Markov models, the Baum and Viterbi algorithms, efficient hypothesis search methods, statistical decision trees, the estimation-maximization (EM) algorithm, maximum entropy estimation and estimation of discrete probabilities from sparse data for acoustic and language modeling. Weekly assignments and several programming projects. [Applications] Co-listed as 520.666 Sec. 01 TTh 9-10:15

600.671 SPECIAL TOPICS ON BIO-NANO COMPUTING Basu Limit 20 Course covers nanotechnology, bio-nanotechnology, introductory structural biology, molecular bioengineering, DNA computing, molecular electronics, and related fields with a focus on the design, fabrication, use, and development of systems with molecular-scale components. Previous knowledge of chemistry or macromolecular structure is not required. Course is appropriate for graduate and advanced undergraduate students in
### COMPUTER SCIENCE

Engineering, computer science, chemistry, and information technology-related fields. [Applications]

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Instructor(s)</th>
<th>Section</th>
<th>Time</th>
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<tbody>
<tr>
<td>600.726</td>
<td>SEMINAR IN PROGRAMMING LANGUAGES</td>
<td>Smith Perm. Req'd</td>
<td>01</td>
<td>W 11-11:50</td>
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<td>This seminar course covers recent developments in the foundations of programming language design and implementation. Topics covered include type theory, process algebra, higher-order program analysis, and constraint systems. Students will be expected to present papers orally.</td>
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<td>600.735</td>
<td>SEMINAR IN MACHINE LEARNING</td>
<td>Sheppard Limit 30</td>
<td>01</td>
<td>Th 9-9:50</td>
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<td>This seminar course will look at research in machine learning. Topics will be selected from those of mutual interest between students and the instructor. Sample topics include reinforcement learning, kernel methods, experimental methods in machine learning, computational learning theory, lazy learning, evolutionary computation, and neural networks. Students are expected to select papers and lead discussion.</td>
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<td>600.745</td>
<td>SEMINAR IN CISST</td>
<td>Staff</td>
<td>01</td>
<td>W 12-1:15</td>
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<td>This weekly seminar will focus on research issues in computer integrated surgery, including subjects such as medical image analysis, statistical modeling, visualization, vision sensing, surgical planning, medical robotics, and clinical applications. The purpose of the course is to widen the knowledge and awareness of the participants in current research in these areas, as well as to promote greater awareness and interaction between multiple research groups within the University and beyond. The format of the course is informal presentation by a pre-eminent invited speaker, followed by free discussion.</td>
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<tr>
<td>600.746</td>
<td>SEMINAR ON MEDICAL IMAGE</td>
<td>Prince/Taylor Limit 10</td>
<td>01</td>
<td>T 3-4:50</td>
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<td>ANALYSIS</td>
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<td>A weekly seminar focusing on research issues in medical image analysis, including image segmentation, registration, statistical modeling, and applications. Also includes selected topics relating to medical image acquisition, especially where they relate to analysis. Course will provide the participants with a thorough background in current research in these areas, and promote greater awareness and interaction between multiple research groups within the University. Course format is informal. Students will read selected papers. Individual students will be assigned on a rotating basis to lead the discussion on particular papers or sections of papers. Co-listed with 520.746.</td>
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<tr>
<td>600.757</td>
<td>SEMINAR IN COMPUTER GRAPHICS</td>
<td>Kachalan</td>
<td>01</td>
<td>TBA</td>
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<td>A review of current research in computer graphics. Course meets for an hour once a week and one of the participants will lead the discussion for the week.</td>
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<td>600.765</td>
<td>SEMINAR IN NATURAL LANGUAGE PROCESSING</td>
<td>Eory</td>
<td>01</td>
<td>Th 12-1:15</td>
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<td>Essy Limit 30 Perm. Req'd. A reading group exploring important current research in the field and potentially relevant material from related fields. Enrolled students are expected to present papers and lead discussion.</td>
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<tr>
<td>600.766</td>
<td>SEMINAR IN MACHINE TRANSLATION</td>
<td>Callison-Burch/Hall Limit 30 Perm. Req'd.</td>
<td>01</td>
<td>F 11-11:50</td>
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<td>The weekly machine translation reading group will review current research in statistical machine translation, and well as relevant historical papers. Enrolled students will present papers and lead discussions.</td>
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<td>600.802</td>
<td>DISSERTATION RESEARCH</td>
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<td>Note: When registering please use faculty section numbers listed under 600.804</td>
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<td>600.804</td>
<td>GRADUATE RESEARCH</td>
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<td>12 Amir</td>
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<td>17 Shapiro</td>
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</table>
COMPUTER SCIENCE

18  Hohenberger
19  Karchin
20  Ateniese
21  Rubin
22  Monrose
23  Terzis
24  Scheinerman
25  Winslow
26  Kazdan
27  Jelinek
28  Froehlich
29  Szalay
30  Kazanzides

600.810   INDEPENDENT STUDY
Note: When registering please use faculty section numbers listed under 600.804
Perm. Req’d.

ELECTRICAL & COMPUTER ENGINEERING

520.142 (E,Q) DIGITAL SYSTEMS FUNDAMENTALS I
(3) Meyer  Limit 100   Number systems and computer codes, weighting functions, minimization of switching functions, Quine - McLaughlin method, sequential logic, state tables, memory devices, analysis, and synthesis of synchronous sequential devices.

Sec. 01  MWF 11-11:50

520.214 (E,Q) SIGNALS AND SYSTEMS I (4) Cooper
Prereq: 520.213; Coreq: 110.202
Limit 28 per section   An introduction to discrete-time and continuous-time signals and systems covers representation of signals and linear time-invariant systems and Fourier analysis.

Lec.  MWF 1:30-2:20
Sec. 01  T 8:40-9:30
02  Th 1:30-2:20
03  T 1:30-2:20

520.216 (E) INTRODUCTION TO VLSI (3) Pouliquen
Limit 60   Prereq: 520.142 and 520.213
This course teaches the basics of switch-level digital CMOS VLSI design. This includes creating digital gates using MOS transistors as switches, laying out a design using CAD tools, and checking the design for conformance to the Scalable CMOS design rules.

Sec. 01  TTh 1:30-2:45

520.220 (E) FIELDS, MATTER AND WAVES (3)
Westgate  Limit 50   Prereq: 520.219 or equivalent  Magnetostatics in vacuum and material media. Maxwell’s equations and time-dependent electric and magnetic fields. Electromagnetic waves and radiation. Transmission lines, wave guides, applications.

Sec. 01  MW 3-4:15

520.410 (E) FIBER OPTICS AND DEVICES (3) Kang
Limit 25  Prereq: 520.214, 520.219, 220 or equivalent  This course covers light propagation in fiber optic light guides, integrated optic wave guides, photodetectors, and the photon nature of light. Topics include light propagation in step-index and graded-index optical fibers, dielectric slab waveguides, photodetectors, photon shot noise, and photodetector signal-to-noise ratios.

Sec. 01  TTB 1:30-2:45

520.415 (E) IMAGE PROCESSING & ANALYSIS II
(3) Goutsias
Prereq: 520.414  This course is a continuation of 520.414 and covers fundamental methods for the processing and analysis of images and describes standard and modern techniques for the understanding of images by morphological image processing and analysis, image representation and description, and image recognition and interpretation. Laboratory exercises demonstrate key aspects of the course.

Sec. 01  MW 4:30-5:45pm

520.424 (E,Q) FPGA SYNTHESIS LABORATORY (3)
Jenkins  Prereq: 520.142, 520.345, 520.349 or 520.372, 600.333-334 or equivalent advanced competence in computer systems  An advanced laboratory course in the application of FPGA technology to information processing, using VHDL synthesis methods for hardware development. The student will use commercial CAD software for VHDL simulation and synthesis, and implement their systems in programmable XILINX 20,000 gate FPGA devices. The lab will consist of a series of digital projects demonstrating VHDL design and synthesis methodology, building up to final projects at least the size of an 8-bit RISC computer. Projects will encompass such things as system clocking, flip-flop, and control, and arithmetic. The students will learn VHDL methods as they proceed through the lab projects, and prior experience with VHDL is not a prerequisite.

Sec. 01  TTh 3:40-5:50, Lab 3-4:50
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Section</th>
<th>Credits</th>
<th>Units</th>
<th>Prerequisites</th>
<th>Description</th>
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<tbody>
<tr>
<td>520.425 (E)</td>
<td>FPGA PROJECTS LABORATORY (3)</td>
<td>Jenkins</td>
<td>Sec. 01</td>
<td>TBA</td>
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<td>Prereq: 520.424 and senior status, no exceptions. Laboratory course for FPGA based senior projects. Students will work in teams to complete a design project that makes use of embedded FPGAs. The projects will make use of the Spartan2 XSA boards and other resources from the FPGA Synthesis lab course. Possible projects include: A 16 or 32 bit RISC processor with student designed ISA architecture, assembler, and mini operating system; or a Spartan2 emulation of an existing microprocessor such as an 8051, an optical communication system to transmit stereo music using various modulation schemes for comparison (This would include FM or AM and at least one digital scheme such as FSK), or a digital receiver for commercial AM or FM radio. Students are expected to complete an demonstration and produce a poster session final report.</td>
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<tr>
<td>520.429 (E,Q)</td>
<td>PRINCIPLES OF PARALLEL PROGRAMMING (3)</td>
<td>Podrazik</td>
<td>Sec. 01</td>
<td>TBA</td>
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<td>Prereq: Proficiency in programming in the C language Programming models and languages for current computing platforms. Computational models include shared memory multiprocessors. Essential techniques of message-passing parallel programming will be based upon MPI (Message Passing Interface), shared memory programming will use the OpenMP standard. Other parallel language extensions will be studied, including Split-C and UPC (Unified Parallel C). Programming projects will be given for the IBM SP parallel computer and other available departmental multicomputers.</td>
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<td>520.432 (E)</td>
<td>MEDICAL IMAGING SYSTEMS (3)</td>
<td>Prince</td>
<td>Sec. 01</td>
<td>TBA</td>
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<td>Prereq: 520.214 An introduction to the physics, instrumentation, and signal processing methods used in projection radiography, X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality, with attention also given to the resulting resolution, contrast, and signal-to-noise ratio of images. Co-listed as 580.472</td>
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<td>520.448</td>
<td>ELECTRONICS DESIGN LAB (3)</td>
<td>Etienne-Cummings</td>
<td>Sec. 01</td>
<td>TBA</td>
<td></td>
<td>Prereq: 520.216, 520.345 or equivalent; Recommended: 500.335, 500.334, 520.349, 520.372, 520.409 or 520.491 An advanced laboratory course in which teams of students design, build, test and document application specific information processing microsystems. Semester long projects range from sensors/actuators, mixed signal electronics, embedded microcomputers, algorithms and robotics systems design. Demonstration and documentation of projects are important aspects of the evaluation process.</td>
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<td>520.450</td>
<td>ADVANCED MICROPROCESSOR LAB (3)</td>
<td>Glaser</td>
<td>Sec. 01</td>
<td>TBA</td>
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<td>Prereq: 520.234 This course covers the usage of common microcontroller peripherals. Interrupt handling, timer operation, serial communication, digital to analog and analog to digital conversions, and flash ROM programming is done on the 68HC08, 8051, and 682 microcontrollers. Upon completion, students can use these flash-based chips as elements in other project courses.</td>
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<td>520.454 (E,N)</td>
<td>CONTROL SYSTEMS DESIGN (D)</td>
<td>Iglesias</td>
<td>Sec. 01</td>
<td>TBA</td>
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<td>Prereq: 520.353, 110.201 Classical and modern control systems design methods. Topics include formulation of design specifications, classical design of compensators, state variable and observer based feedback. Computers are used extensively for design, and laboratory experiments are included.</td>
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<tr>
<td>520.458 (E,N)</td>
<td>BASIC QUANTUM MECHANICS FOR ENGINEERS Part II (3)</td>
<td>Kaplan</td>
<td>Sec. 01</td>
<td>TBA</td>
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<td>Prereq: 520.201 This course introduces the basic topics and topics of modern digital communication beginning with the mathematical representation and spectral properties of random signals and a basic introduction to the detection of real and complex signals in the presence of noise. Memoryless modulation and demodulation schemes are thoroughly studied for the Gaussian channel, and measures of performance are developed. Topics in wireless communication will be introduced.</td>
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<tr>
<td>520.465 (E,Q)</td>
<td>DIGITAL COMMUNICATIONS I (3)</td>
<td>Cooper</td>
<td>Sec. 01</td>
<td>TBA</td>
<td></td>
<td>Prereq: 520.401, 550.310 or 550.420 This course introduces the basic tools and topics of modern digital communication beginning with the mathematical representation and spectral properties of random signals and a basic introduction to the detection of real and complex signals in the presence of noise. Memoryless modulation and demodulation schemes are thoroughly studied for the Gaussian channel, and measures of performance are developed. Topics in wireless communication will be introduced.</td>
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<tr>
<td>520.481 (E)</td>
<td>MICROWAVES AND HIGH SPEED CIRCUITS (3)</td>
<td>Ferguson</td>
<td>Sec. 01</td>
<td>TBA</td>
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<td>Prereq: 520.219 This course will introduce key concepts important to microstrip circuits and will include: propagation of waves in transmission lines with emphasis on microstrip</td>
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ELECTRICAL & COMPUTER ENGINEERING

circuits; and design and analysis of couplers, matching circuits, amplifiers, filters, oscillators and high-speed digital circuits. Extensive use is made of CAD tools.

520.482 (E,N) INTRODUCTION TO LASERS (3) Khurgin Limit 20  Prereq: 520.119-220 Fields, Matter, & Waves  This course covers the basic principles of laser oscillation. Specific topics include propagation of rays and Gaussian beams in lenslike media, optical resonators, spontaneous and stimulated emission, interaction of optical radiation and atomic systems, conditions for laser oscillation, homogenous and inhomogeneous broadening, gas lasers, solid state lasers, Q-switching and mode locking of lasers.

Sec. 01 TTh 12:15-1:15

520.483 BIOPHOTONICS LABORATORY (3) Kang This laboratory course involves designing a set of basic optical experiments to characterize and understand the optical properties of biological materials. The course is designed to introduce students to the basic optical techniques used in medicine, biology, chemistry and material sciences.

Sec. 01 W 1:30-4:50

520.485 (E,N) ADVANCED SEMICONDUCTOR DEVICES (3) Khurgin Limit 20  This course is designed to develop and enhance the understanding of the operating principles and performance characteristics of the modern semiconductor devices used in high speed optical communications, optical storage and information display. The emphasis is on device physics and fabrication technology. The devices include heterojunction bipolar transistors, high mobility FETs, semiconductor lasers, laser amplifiers, light-emitting diodes, detectors, solar cells and others.

Sec. 01 TTh 3:45-5:00

520.492 (E) MIXED-SIGNAL VLSI SYSTEMS (3) Andreou Limit 20  Prereq: 520.491 or equivalent Silicon models of information and signal processing functions, with implementation in mixed analog and digital CMOS integrated circuits. Aspects of structured design, scalability, parallelism, low-power consumption, and robustness to process variations. Topics include digital-to-analog and analog-to-digital conversion, delta-sigma modulation, biomicroinstrumentation, and adaptive neural computation. The course includes a VLSI design project.

Sec. 01 WF 1:30-2:45

520.499 SENIOR DESIGN PROJECT (3) Staff Capstone design project, in which a team of students engineer a system and evaluate its performance in meeting design criteria and specifications. Example application areas are microelectronic information processing, image processing, speech recognition, control, communications and biomedical instrumentation. The design needs to demonstrate creative thinking and experimental skills, and needs to draw upon knowledge in basic sciences, mathematics and engineering sciences. Interdisciplinary participation, such as by biomedical engineering, mechanical engineering and computer science majors, is strongly encouraged.

TBA

520.502 INDEPENDENT STUDY - FRESHMEN/ SOPHOMORES Staff Individual, guided study under the direction of a faculty member in the department. The program of study or research, including the credit to be assigned, must be worked out in advance between the student and the faculty member involved.

520.504 INDEPENDENT STUDY - JUNIORS/ SENIORS Staff Individual study, including participation in research, under the guidance of a faculty member in the department. The program of study or research, time required, and credit assigned must be worked out in advance between the student and the faculty member involved.

520.550 ECE INTERNSHIP
ELECTRICAL & COMPUTER ENGINEERING

520.610  COMPUTATIONAL FUNCTIONAL GENOMICS  Goutsias  Limit 45
Prereq: working knowledge of elementary probability and statistics. This class provides an introduction to mathematical and computational techniques for Functional Genomics, a growing area of research in cell biology and genetics whose objective is to understand the biological function of genes and their interactions. Computational functional genomics focuses on the problems of collecting, processing and analyzing data related to genome-wide patterns of gene expression with the objective to discover mechanisms by which a cell’s gene expression is coordinated. This has become feasible with the development of DNA microarray technology, which allows the simultaneous measurement of gene expression levels of thousand of genes. Topics covered: an introduction to cell biology (cells, genome, DNA, transcription, translation, control of gene expression, DNA and RNA manipulation), DNA microarray technology and experimental design, processing and analysis of microarray data (data reduction and filtering, clustering), and computational models for genetic regulatory networks (Boolean networks, Bayesian networks, ODE-based networks). Co-listed with 580.610

Sec. 01  MW 1:30-2:45

520.652  FILTERING AND SMOOTHING  Weinert  Limit 20  Prereq: 520.651
A course on least-squares estimation of random processes generated by linear systems. Topics include projections, square-root algorithms, initial and boundary value models.

Sec. 01  TTh 12-1:15

520.666  INFORMATION EXTRACTION FROM SPEECH AND TEXT  Khudanpur  Limit 30
Prereq: 550.310 and 600.120 or equivalent, expertise in C or C++ programming, introduction to statistical methods of speech recognition (automatic transcription of speech) and understanding. The course is a natural continuation of 600.465 but is independent of it. Topics include elementary information theory, hidden Markov models, the Baum and Viterbi algorithms, efficient hypothesis search methods, statistical decision trees, the estimation-maximization (EM) algorithm, maximum entropy estimation and estimation of discrete probabilities from sparse data for acoustic and language modeling. Co-listed as 600.666

Sec. 01  TTh 9-10:15

520.682  COMPUTATIONAL & SYSTEMS NEUROSCIENCE  Elhilali  Limit 20
Prereq: Undergrad level calculus, linear algebra and elementary probability theory or permission of instructor.

520.691  OPTOELECTRONIC MICROSYSTEMS  Andreou  Limit 20

WF 3-4:15

520.738  ADVANCED ELECTRONICS DESIGN LAB  Etienne-Cummings  Limit 15 per section
Graduate students only  This course is the graduate expansion of the 520.448 Electronic Design Lab, which is an advanced laboratory course in which teams of students design, build, test and document application specific information processing microsystems. Semester long projects range from sensors/actuators, mixed signal electronics, embedded microcomputer, algorithms and robotics systems design. Demonstration and documentation of projects are important aspects of the evaluation process. For this graduate expansion, all projects will be based on recently published research from IEEE Transactions. The students will be required to fully research, analyze, implement and demonstrate their chosen topic. The emphasis will be on VLSI microsystems, although other topics will also be considered.

Sec. 01  Lab W 11-11:50  F 1:30-4:20

520.746  SEMINAR ON MEDICAL IMAGE ANALYSIS  Prince/Taylor  Limit 5
This weekly seminar will focus on research issues in medical image analysis, including image segmentation, registration, statistical modeling, and applications. It will also include selected topics relating to medical image acquisition, especially where they relate to analysis. The purpose of the course is to provide the participants with a background in current research in these areas, as well as to promote greater awareness and interaction between multiple research groups within the University. Co-listed as 600.746

Sec. 01  T 3-4:50

520.748  ADVANCED TOPICS IN MRI  Osman

Sec. 01  TBA

520.753  FREE SPACE ATMOSPHERIC OPTICAL COMMUNICATIONS  Davidson  Limit 20
Prereq: 520.619  A seminar devoted to advanced research topics on optical communications systems and devices.

Sec. 01  TTh 3-4:15
ELECTRICAL & COMPUTER ENGINEERING

520.763 SEMINAR ON SOLID STATE, QUANTUM ELECTRONICS AND NONLINEAR OPTICS Kaplan Limit 20
Research Seminar on current research in the area of interaction of light with matter.

Sec. 01 TBA

520.766 SEMINAR IN ERROR CONTROL CODING Cooper Limit 20
A seminar on new and emerging developments in error control coding will meet weekly to review and discuss those developments in seminar format. Participants will select topics from a suggested list or from areas of their own specific interest for presentation. An introductory knowledge of error control coding, such as is found in any major textbook, will be needed for satisfactory participation.

Sec. 01 T 4:50pm

520.800 INDEPENDENT STUDY Individual, guided study under the direction of a faculty member in the department. May be taken either term by graduate students.

520.802 DISSERTATION RESEARCH

520.810 SPECIAL STUDIES

ENTREPRENEURSHIP & MANAGEMENT

660.102 PERSONAL FINANCE (3)
Sec. 01: Legos
Sec. 02: Ritter Limit 35 per section
Wondering how to make your money work while you’re out working for your money? This interactive course introduces students to the real-world personal financial decisions they will face throughout life. Working together, students will evaluate various solutions and determine the best way to meet their own financial goals. Topics include prioritizing spending, purchasing a car and home, credit, developing and implementing an investment strategy, insurance options, deciphering taxes, and retirement planning.

Sec. 01 MWF 12-12:50
Sec. 02 TTh 10:30-11:45
Sec. 03 Th 6:15-9pm

660.105 INTRODUCTION TO BUSINESS (4)
Aronhime Limit 35 per section
This course provides a survey and overview of the various functions of business in a global market economy. After completing the course students will be able to identify, discuss and understand the nature of the business and the importance of the profit motive; the forms of business ownership and when they are appropriate and advantageous; the functions and responsibilities of management; the functional division of business into operations and production management, marketing, finance, labor relations and human resource management, R&D, and strategy; the types of financial institutions and their role in the economy; the functions of venture capital and the stock market; the evaluation of the financial health and potential of a company using the business plan or annual report.

Sec. 01 MWF 12-12:50
Sec. 02 Th 1:30-2:20
Sec. 03 Th 6:15-9pm

660.203 FINANCIAL ACCOUNTING (3)
Aronhime Limit 35 per section
A first course in financial accounting, focusing on production of financial statements for for-profit business entities required by Generally Accepted Accounting Principles (GAAP). Fundamental understanding of components of the statements and maintenance of accounts during the accounting cycle. Students are confronted with various theoretical constructs in the context of a problem-solving learning environment.

Sec. 01 MWF 10-10:50
Sec. 02 Th 6:15-9pm

660.204 MANAGERIAL ACCOUNTING (3)
Kingsley Limit 35

Sec. 01 M 6:15-9pm
Sec. 02 T 6:15-9pm
Sec. 03 W 6:15-9pm

660.205 BUSINESS LAW I (3)
Limit 35 per section
This course is designed for the student

Sec. 01 M 6:15-9pm
Sec. 02 T 6:15-9pm
Sec. 03 W 6:15-9pm
Sec. 04 Th 6:15-9pm
ENTREPRENEURSHIP & MANAGEMENT

who is interested in either (a) a broad knowledge of law as it relates to modern business, or (b) a survey of many business related aspects of law with a view to further legal studies. Course will involve reviewing and analyzing statutory and case law covering a variety of substantive subject areas including civil procedure, personal and subject matter jurisdiction, intentional torts, negligence, criminal law, contract law, consumer law and parts of the Uniform Commercial Code. This course, together with Business Law II, will provide a complete, self-contained, well-rounded, in-depth study of Business Law, or will provide a foundation for further legal study.

660.206 (S) BUSINESS LAW II (3)
Fisher  Limit 35 per section
Prereq: 660.205 Business Law I
Building on the material from Business Law I, topics examined include entrepreneurship, business entities and business formation, principles of agency, real property, personal property, bailments, bankruptcy, secured transactions, employment discrimination, business financing, investor protection, antitrust and environmental law.

660.220 PRINCIPLES OF MANAGEMENT (3)
Fenwirec  Limit 35 per section
Recommended Prereq: 660.105
Introduction to Business
This course introduces the student to the management process. The course takes an integrated approach to management by examining the role of the manager from a traditional and contemporary perspective while applying decision-making and critical thinking skills to the challenges facing managers in today's globally-diverse environment. The course examines the techniques for controlling, planning, organizing resources and leading the workforce.

660.231 (H) CASE STUDIES IN BUSINESS ETHICS (3)
Goldenberg  Limit 35 per section
This course is designed as a workshop using case studies to introduce students to the ethical concepts that are relevant to resolve moral issues in contemporary business and social settings - both global and personal in nature. Students will learn the reasoning and analytical skills needed to apply ethical concepts to their own decision-making, to identify moral issues involved in the management of specific problem areas in business and society, and to understand the social and natural environments which give rise to moral issues. The course focus is on performance articulated by clear reasoning and effective verbal and written communication concerning ethical issues in business and society.

660.241 INFORMATION TECHNOLOGY MANAGEMENT (3) Roiter  Limit 40
Recommended Prereq: Introduction to Business 660.105
This course surveys the fundamentals of information technology from a management point of view. It provides the foundation for follow-up courses in legal and ethical issues, and 660.341 Business Process and Quality Management. Major topic areas include systems concepts and value in the global economy, data and technology management, systems analysis and design, telecommunications, and societal and legal issues. The student will gain an understanding of information technology and an appreciation for information technology as a process enabler and strategic facilitator in the Internet age. Cases on business and legal aspects of technology are used throughout to focus on real-world issues.

660.250 PRINCIPLES OF MARKETING (3)
Sec. 01 Kendrick
Sec. 02 Wills
Limit 35 per section
This course explores the role of marketing in society and within the organization. It examines the process of developing, pricing, promoting and distributing products to consumer and business markets and shows how marketing managers use the elements of the marketing mix to gain competitive advantage. Through interactive, application-oriented exercises, case videotapes, a guest speaker (local)
entrepreneurship & management

marketer), and a group project, students will have ample opportunity to observe key marketing concepts in action. The group project requires each team to research the marketing plan for an existing product of its choice. Teams will analyze what is currently being done by the organization, choose one of the strategic growth alternatives studied, and recommend why this alternative should be adopted. The recommendations will include how the current marketing plan will need to be modified in order to implement this strategy and will be presented to the instructor in written form and presented to the class.

660.302 (S) CORPORATE FINANCE (3) Powell
Limit 35  Prereq: 660.203 Financial Accounting; Recommended Prereq: Macroeconomics, Microeconomics
This course is designed to familiarize the student with the basic concepts and techniques of financial management practice. The course begins with a foundational discussion of time value of money and moves on to time value application in the areas of financial asset valuation, cost of capital calculation, and capital budgeting. Students also receive basic instruction in financial statement analysis, risk and portfolio theory, capital structure and working capital management. The course wraps up with an overview of derivatives.

660.305 (S) INTELLECTUAL PROPERTY LAW (3) Peros
Limit 35  Prereq: 660.205 Business Law I
This course explores the acquisition, protection and commercialization of intellectual property, such as patents, trademarks, copyrights and trade secrets, and its impact on businesses and organizations. The course addresses critical issues such as the various types of intellectual property, the protection and commercialization of intellectual property by business and legal means, and the valuation of intellectual property. In addition, the tension between exclusive rights in intellectual property and free competition will be discussed throughout this course. Through interactive class discussions and a group project, students will have ample opportunity to develop a better understanding pertaining to the different types of intellectual property and to develop an intellectual property strategic plan for protecting an intellectual property portfolio. Specifically, the group project requires each team to research a selected Maryland based company’s intellectual property, its plan for protection and commercialization and its business goals, products and services. Each team will then analyze how well the company’s current business goals relate to its intellectual property portfolio, and recommend changes to better meet these company’s goals.

660.306 (S) LAW & THE INTERNET (3) Franceschini
Limit 35  Prereq: 660.205 Business Law I
Sometimes called “Cyber law,” this course uses the case study method to examine some of the most significant and compelling legal aspects, issues, and concerns involved with operating a business enterprise in an Internet environment. Some of the issues likely to be covered include jurisdiction, resolution of online disputes, patents, trademarks, copyright, licenses, privacy, defamation, obscurity, the application of traditional concepts of tort liability to an Internet context, computer crime, information security, antitrust (Microsoft case), taxation, international considerations, and an analysis of other recent litigation and/or statutes.

660.330 LEADERSHIP DYNAMICS (3) Friesen
The course explores theories and personal experiences that illustrate the nature of leadership in formal organizational settings. Topics covered include leadership traits and behaviors, power, influencing, decision-making, charisma, followership and bad leadership. The format for the class is a mixture of presentations (by the instructor, students), exposure to local leaders, experiential exercises and self-assessments (intended to help awareness of style and skills) and case analysis (biographical analysis and personal cases).

Sec. 01 W 6:15-9pm
Sec. 01 M 6:15-9pm
Sec. 01 W 6:15-9pm
Sec. 01 TTh 3:45-5:15
LEADERSHIP THEORY (3) Smedick
Limit 35  Recommended Prereq:
660.105 Introduction to Business or
660.220 Principles of Management
Students will be introduced to the history of
Leadership Theory from the "Great
Man" theory of born leaders to
Transformational Leadership theory of
non-positional learned leadership.
Transformational Leadership theory
postulates that leadership can be learned
and enhanced. The course will explore
the knowledge base and skills necessary to be
an effective leader in a variety of
settings. Students will assess their
personal leadership qualities and develop
a plan to enhance their leadership
potential.

Sec. 01  MWF 12-12:50

NEGOTIATION & CONFLICT
MANAGEMENT (3) Rice
Limit 35
Prereq: 660.105 Introduction to Business;
Recommended Prereq: an additional
course in the Entrepreneurship &
Management Program or in the Social
Sciences
Attendance at first class is mandatory
The focus of this class is the nature and
practice of conflict resolution and
negotiation within and between
organizations. The primary format for
learning in this class will be structured
experimental exercises designed to expose
students to different aspects of negotiation
and to build tangible skills through
interpersonal exchange. While some class
time will be devoted to presentations on
theories and approaches, the class method
primarily relies on feedback from fellow
classmates on their observations of
negotiation situations and on personal
reflections by students after each
structured experience. Topics include
conflict style, salary, negotiation, and
group conflict.

Sec. 01  M 3-5:45pm

MARKETING STRATEGY (3) Kendrick
Limit 35
Prereq: 660.250 Principles of Marketing.
This writing intensive course helps
students develop skills in formulating,
implementing, and controlling a strategic
marketing program for a given product-
market entry. Using a structured approach
to case analysis, students will learn how
to make the kinds of strategic marketing
decisions that will have a long-term
impact on the organization and support
these decisions with quantitative analyses.
Through textbook readings, students will
learn how to identify appropriate
marketing strategies for new, growth,
mature, and declining markets and apply
these strategies as they analyze a series of
marketing cases. The supplementary
readings, from a broad spectrum of
periodicals, are more applied and will
allow students to see how firms are
addressing contemporary marketing
challenges. In addition to analyzing cases
individually, each student will be part of a
team that studies a case during the latter
half of the semester, developing
marketing strategy recommendations,
including financial projections, and
presenting them to the class.

Sec. 01      MW 1:30-2:45

SMALL BUSINESS MANAGEMENT
(3) Layt
Limit 35 per section
Recommemdated Prereq: 660.105
Introduction to Business, 660.220
Principles of Management
Provides tools students will need to
successfully launch and manage a small
business in a competitive, global
environment. Examines the challenges of
trepreneurs, the business plan,
marketing and financial issues, hiring, and
managing people.

Sec. 01 02 MW 12-1:50 02 TTh 12-1:50

ADVERTISING & PROMOTION (3) Kendrick
Limit 30 Prereq: 660.250
Principles of Marketing
This course builds on the promotional mix
concepts covered in Principles of
Marketing—advertising, public relations,
sales promotion and personal selling.
Students will learn how marketers are
changing the ways they communicate
with consumers and the ways in which
promotional budgets are allocated—and
how this impacts the development of
marketing strategies and tactics. Working
with a client (provided by EdVenture
Partners) that has chosen this JHU class
as its "advertising agency" and an actual
budget provided by the firm, the class will
form small teams to mirror the functional
organization of an actual ad agency
(market research, media
strategy/planning, copywriting/design,
ENTREPRENEURSHIP & MANAGEMENT

public relations, etc.). Student teams will then develop a promotional plan and corresponding budget to reach the desired target market (JHU undergrads who meet the client’s criteria), implement the plan and then evaluate its effectiveness through pre- and post campaign market research conducted on the target consumer.

660.465 (W)

TECHNOLOGY COMMERCIALIZATION (3)
Aronhime
Limit 30
Juniors and Seniors only
Recommended Prereqs: 660.250 Principles of Marketing
This course utilizes lectures, case analyses, and team projects to provide a strategy framework for determining the commercial value of new technologies and the best path for realizing that value. Student teams work on specific new technologies by reviewing applicable literature, defining fields of use, analyzing the strength of the provisional patent, identifying technology and market gaps, gauging the interest of potential customers and licensees, projecting the potential returns to licensees, evaluating spin-off possibilities, and determining the value of the technology from the perspective of its owner(s). They hold extensive discussions with inventors, university technology transfer directors, intellectual property attorneys, independent experts, outside investors, and potential licensees and customers.

660.500

BUSINESS INTERNSHIP (3) Wierman
Perm. Req’d. Completed application must be submitted to 104 Whitehead Hall.

660.501

PRACTICUM IN ENTREPRENEURSHIP (Variable credit)
Aronhime
Juniors and Seniors only
Permission required - Completed application must be submitted to 104 Whitehead Hall.
Students work on existing business plans under the close supervision of Prof. Aronhime. Students are expected to meet regularly with the faculty member and complete assigned readings and projects.

GENERAL ENGINEERING

560.141 (E,N) (W)
PERSPECTIVES ON THE EVOLUTION OF STRUCTURES (3)
Schauer
Limit 33
Why do buildings and bridges look the way they do today? Students will be provided the tools to answer this question for themselves through a study of the history of the design of buildings and bridges throughout the world from both engineering and architectural aesthetic perspectives. Only simple mathematics is required (no calculus). Students will participate in individual and group critique of structures from engineering, architectural, and social points of view.

500.495

ANIMATION IN NANOTECHNOLOGY AND MEDICINE (3)
Searson
Limit 10
Perm. Req’d. This course involves the use of animation to visualize scientific processes in nanotechnology and medicine. Animation is becoming an increasingly important tool in both research and education, especially in fields such as nanobiotechnology that involve complex processes and occur at multiple length scales. Understanding of the subject matter is gained through interaction with faculty and graduate students in research groups in the Institute of NanoBioTechnology at Hopkins. The course follows the basic animation pipeline from concept to post production. Same as 500.695

500.602

SEMINAR: ENVIRONMENTAL AND APPLIED FLUID MECHANICS
Menvenais
Cross-listed with DOGEE, Earth and Planetary Sciences and Mechanical Engineering

500.616

HHMI/IGERT JOURNAL SEMINAR
Shub
Limit 35
Students in the IGERT/HHMI training grant programs study and present topics in nanotechnology

Sec. 01 TTh 10:30-11:45

Sec. 01 TBA

Sec. 01 TBA

Sec. 01 TTh 3-4:15

Sec. 01 TBA

Sec. 01 F 11-12:20

Sec. 01 M 12-12:50
### GENERAL ENGINEERING

applied to biology from the scientific literature.

**500.695**

**ANIMATION IN NANOTECHNOLOGY AND MEDICINE**  
Searson  
Limit 10  
Perm. Req’d  
Same as 500.495

**500.781**

**PREPARATION FOR UNIVERSITY TEACHING**  
Shinglee  
Limit 8  
Full-time EN Graduate Students only  
This course will prepare graduate students to teach at the university level. Topics covered include large and small class teaching, characteristics of student learning, syllabus construction, grading students, and developing a teaching portfolio. Co-listed as 360.781

**500.851**

**ENGINEERING RESEARCH PRACTICUM**  
WSE PhD students only

### GEOGRAPHY AND ENVIRONMENTAL ENGINEERING

**570.210 (E,Q)**

**INTRODUCTION TO COMPUTATION AND MATHEMATICAL MODELING**  
(3) Wilcock  
Limit 25  
Prereq: 110.108 or equivalent  
An introduction to the use of computers in developing mathematical models. A structured approach to problem definition, solution, and presentation using spreadsheets and mathematical software. Modeling topics include elementary data analysis and model fitting, numerical modeling, dimensional analysis, optimization, simulation, temporal and spatial models.

**570.239 (E,N)**

**CURRENT AND EMERGING ENVIRONMENTAL ISSUES**  
(3) Roberts  
Limit 25  
Prereq: second semester Chemistry  
Scientific principles underpinning environmental issues, with an emphasis on potential impacts of anthropogenic perturbation on human and ecosystem health.

**570.302 (E,N)**

**WATER & WASTEWATER TREATMENT**  
(3) Movahed  
NOTE: All students wishing to enroll in 570.302 should enroll in 575.405 through the EPP Program. 575.405 will be an online course. Please visit the EPP website http://ptesrv.apl.jhu.edu/ for more information.

**570.304 (E,N) (W)**

**ENVIRONMENTAL ENGINEERING LAB**  
(2) Stowers  
Limit 20  
Pre/co-req: 570.301-302.  
Introduction to laboratory measurements relevant to water supply and wastewater discharge, including pH and alkalinity, inorganic and organic contaminants in water, reactor analysis, bench testing for water treatment, and measurement and control of disinfection by-products.

**570.309 (N)**

**MICROBIOLOGY**  
(3) Ward  
Prereq: Biochemistry  
Limit 35  
Introduction to microbiology, with an emphasis on prokaryotic microorganisms and their roles in environmentally and medically important issues. Aspects of microbial growth and nutrition, diversity, ecology, genetics and genomics will be covered.

**570.310 (E)**

**ETHICS FOR ENGINEERING**  
(3) Ottem  
Limit 25  
In designing technical artifacts that profoundly change the way we live, engineers have a great influence on our daily life. This influence comes with responsibilities. In their professional life engineers have to make decisions, which affect the future in sometimes disastrous ways. These decisions are not always easy choices between good and evil. New technologies can bring potential benefits to a society, but with an increased risk of costs. A simple example would be the decision between coal and nuclear energy, where both have benefits and both have risks, albeit different benefits and risks. Other examples are the use of ICT versus the question of privacy, or the unforeseen consequences of nanotechnology. Rather than plunging forward despite the potential costs or halting all technical development despite potential benefits, ethics for engineering offers a toolbox for unraveling the decisions. We will focus on description and analysis of the problems encountered, codes of ethics for engineers, argumentation and reasoning.
### GEOGRAPHY AND ENVIRONMENTAL ENGINEERING

- **Uncertainty, ignorance, risks, and their implications for responsible behavior, responsibility within and of organizations (the role of law) and (philosophical) ethics.**

  - The material for this course will include a working book and online material.

- **HYDROLOGY (3)**
  - Instructor: Hilpert
  - Limit: 20
  - Prereq: Differential equations, Fluid mechanics. The occurrence, distribution, movement, and properties of the waters of the Earth. Topics include precipitation, infiltration, evaporation, transpiration, groundwater, and streamflow. Analyzes include the frequency of floods and droughts, time-series analyzes, flood routing, and hydrologic synthesis and simulation.
  - Sec. 01 MWF 10-10:50

- **ENVIRONMENTAL HISTORY (3)**
  - Instructor: Schoenberger
  - Limit: 25
  - Prereq: 270.220
  - Analysis of the factors responsible for the form of the landscape. The concept of the cycle of erosion is discussed primarily in terms of the principles that govern the processes of erosion. Climate, conditions of soil formation, and the distribution of vegetation are considered as they relate to the development of landforms.
  - Sec. 01 MWF 10-10:50, F 1:30-4:50

- **MULTIOBJECT PROGRAMMING**
  - Instructor: Williams/Hobbs
  - Limit: 20
  - Prereq: 570.495 or Perm Req'd.
  - Public sector problems are typically characterized by a multiplicity of objectives and decision makers. This course presents a relatively new area of systems analysis which is useful for such problems: multiobjective programming or vector optimization theory. The fundamental concepts are developed and various methods are presented, including multiattribute value and utility theory.
  - Undergraduate level of 570.618
  - Sec. 01 MW 3:30-4:45

- **ENVIRONMENTAL ENGINEERING DESIGN II (3)**
  - Instructor: Wilcock
  - Limit: 20
  - Prereq: 570.302, 570.352, and 570.419
  - Engineering design process from problem definition to final design. Team projects include written/oral presentations. Students will form small teams that work with local companies or government agencies in executing the project.
  - Sec. 01 MWF 12-12:50

- **PRINCIPLES OF GEOMORPHOLOGY (4)**
  - Instructor: Wilcock
  - Limit: 20
  - Prereq: 270.220
  - Analysis of the factors responsible for the form of the landscape. The concept of the cycle of erosion is discussed primarily in terms of the principles that govern the processes of erosion. Climate, conditions of soil formation, and the distribution of vegetation are considered as they relate to the development of landforms.
  - Field Trip MWF 10-10:50, F 1:30-4:50

- **GEOMORPHIC AND ECOLOGIC FOUNDATIONS OF STREAM RESTORATION (3)**
  - Instructor: Wilcock
  - Limit: 20
  - Principles from hydrology, sedimentation engineering, geomorphology, and ecology applied to design and assessment of stream restoration. Watershed context, design alternatives, uncertainty, ecological response. Field trips, design exercises, and project assessment. Cross-listed with 575.738
  - Sec. 01 M 6-8:30pm

- **ENVIRONMENTAL INORGANIC CHEMISTRY (3)**
  - Instructor: Stone
  - Limit: 25
  - Prereq: 570.443 and 030.449 or permission of instructor.
  - Sec. 01 MWF 12-12:50

- **BIOLOGICAL PROCESSES FOR WATER AND WASTEWATER TREATMENT (3)**
  - Instructor: Bouwer
  - Limit: 25
  - Prereq: 570.411 Fundamentals and application of aerobic and anaerobic biological unit processes for the treatment of municipal and industrial wastewater.
  - Sec. 01 MWF 9-9:50

- **PHYSICAL AND CHEMICAL PROCESSES IN ENVIRONMENTAL ENGINEERING II (3)**
  - Instructor: Ball
  - Limit: 20
  - Prereq: 570.445 or Perm. Req'd
  - Fundamentals and applications of physical and chemical processes used in water and wastewater treatment. Emphasis on Mass transfer processes (adsorption, gas transfer, membrane) and computerized design.
  - Sec. 01 TTh 9-10:15
EXPERIMENTAL METHODS IN ENVIRONMENTAL ENGINEERING AND CHEMISTRY (4) Stone/Roberts
Lmt 22 Prereq. 570.443
An advanced laboratory course covering principles of modern analytical techniques and their applications to problems in environmental sciences. Topics include electrochemistry, spectrometry, gas and liquid chromatography. The course is directed to graduate students and advanced undergraduates in engineering and natural sciences.

Sec.01 M 1:30-5:20
Sec.02 W 1:30-5:20

FUTURES MARKET RESEARCH (3) Hanke Lmt 20 Perm. Req’d
An investigation of some futures market problems and preparation of a research report. Research is focused on developing and testing hypotheses about price behavior in futures markets.

Sec. 01 TBA

HAZARDOUS WASTE ENGINEERING AND MANAGEMENT (3) Alavi Lmt 20
This course addresses traditional and innovative technologies, concepts, and principles applied to the management of hazardous waste and site remediation to protect human health and the environment.

Sec. 01 W 6-8:40pm

APPLIED ECONOMICS AND FINANCE (3) Hanke Limit 20 Perm. Req’d
This course focuses on the workings of equity markets. It includes an analytical review of valuation models and their application to data contained in financial statements. Research reports are required.

Sec. 01 T 3-4:50 F 1:30-2:45

MATHMATICAL MODELS FOR MANAGING URBAN SYSTEMS (3) Hobbs/Williams Limit 30
The mathematical techniques learned in “Environmental Engineering Systems Design” (alternate prerequisite: a course in linear programming) are applied to realistic problems in environmental management. Examples of such problems include management of water resources and water quality, natural areas management and restoration; solid waste collection, disposal, and recycling; public health; air quality management; pollution prevention in energy and transportation systems; and cost allocation in environmental infrastructure development, facility location analysis and optimal design of transportation networks.

Sec. 01 TTh 10:30-11:45

APPLIED ECONOMICS RESEARCH Hanke Prereq. 180.101-102
Satisfactory/Unsatisfactory only
Course given in conjunction with private business and financial institutions, governmental entities and economic research institutes. Requirements include 120 hrs of internship time and a research paper on an applied economics topic.

Cross-listed with Economics and Interdepartmental.

Sec. 01 TBA

MULTIOBJECT PROGRAMMING Williams/Hobbs Limit 20
Perm req’d
Public sector problems are typically characterized by a multiplicity of objectives and decision makers. This course presents a relatively new area of systems analysis which is useful for such problems: multiobjective programming or vector optimization theory. The fundamental concepts are developed and various methods are presented, including multiattributive value and utility theory. Graduate level of 570.413

Sec. 01 MW 3-4:15

SEMINAR: GEOMORPHOLOGY OF SOIL AND PLANTS Wilcock Limit 10

Sec. 01 T 10:30-11:50
GEOGRAPHY AND ENVIRONMENTAL ENGINEERING

570.673 PUBLIC SYSTEMS SEMINAR
Hobbs/Norman/Williams Limit 50 Sec. 01 T 1:30-2:45

570.681 ENVIRONMENTAL ENGINEERING SEMINAR
Bouwer Limit 50 Sec. 01 F 3:4-4:15

570.686 MULTISCALE FLOW AND TRANSPORT IN POROUS MEDIA
Hilpert Limit 50 Sec. 01 Th 3:5-5:20

The scope of this course is to quantitatively describe flow and transport processes in porous media on a variety of length scales ranging from the molecular to the field scale. Phenomena investigated include single-phase and multiphase flow, solute transport, and chemotaxis. We will derive and/or motivate the governing dynamic equations and discuss mathematical and computational methods to solve these equations. This course addresses audiences from environmental and chemical engineering as well as the hydrological sciences. The course will give an introduction to the necessary mathematical and computational methods.

500.602 SEMINAR: ENVIRONMENTAL AND APPLIED FLUID MECHANICS
Meneveau Sec. 01 F 11-12:20

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650.412 (E) JAVA SECURITY (3) Llanso Limit 40 Sec. 01 M 4:30-7pm
Prereq: 600.120 or 600.121 Open to MSSI students Perm Req’d for non-MSSI students This course examines security topics in the context of Java and the emerging area of web services. Emphasis is placed on security services such as confidentiality, integrity, availability, and non-repudiation. Specific topics include mobile code, class loading, bytecode verification, security managers, protection domains, policy files, key management and use, data encryption, hashing, signature generation and verification, certificates, and sealed objects. Various supporting APIs are also considered, such as the JAVA Cryptography Architecture (JCA), Java Cryptography Extension (JCE), and Java Secure Sockets Extension (JSE). Web services topics may include XML digital signatures and encryption, Security Assertions Markup Language (SAML), XML Key Management Specification (KMS), Extensible Access Control Markup Language (XACML) and WS-Security. The course includes multiple programming assignments and a project. Core Technology course for MSSI degree

650.460 (E) SOFTWARE VULNERABILITY ANALYSIS (3) Stubblefield Limit 17 Sec. 01 Online
Prereq: Experience in C++ Programming Course will examine vulnerabilities in C source, stack overflows, writing shellcode etc. Also vulnerabilities in web applications: SQL injection, cookies forceful browsing, As well as vulnerabilities in C binaries fuzzing, exploit development without source among others.

600.472 (F,Q) THEORETICAL CRYPTOGRAPHY (3) Hohenberger Limit 40 Sec. 01 TTh 1:30-2:45
Prereq: 600.471 recommended. The focus of this course is on the definitions and constructions of various cryptographic primitives and protocols, such as one-way functions, pseudo-random generators, digital signature schemes, encryption schemes, zero-knowledge and multi-party computation. We will study how to formulate definitions that capture desired
INFORMATION SECURITY INSTITUTE

security properties as well as techniques for designing and then proving that a construction realizes these properties. Students should be comfortable with the basics of number theory and proof writing. [Analysis]

600.625 COMPUTER AND NETWORK FORENSICS Monrose Limit 25 Prereq: Operating Systems and Systems Programming. This course exposes students to a myriad of fundamental concepts and techniques for recovering and inferring information in computer systems and networks. Topics include (but are not limited to) file system forensics, kernel-level rootkits and associated challenges, reconstructing malware evolution and dynamics, analysis of anonymization and privacy preserving techniques, advanced network traceback, traffic classification, biometrics and digital evidence, data integrity and audit trails, secure remote logging, and system call introspection. A semester-long course project is required. Students will also be responsible for presenting and discussing selected research papers on topics pertinent to the course. Some familiarity with low-level system programming is assumed. [Applications]

Cross-listed with Computer Science
Sec. 01 WF 1:30-2:45

650.630 MORAL AND LEGAL FOUNDATIONS OF PRIVACY Siegel Limit 25 This course explores the ethical and legal underpinnings of privacy. It inquires into the values that underlie the right: constitutional and common law foundations; balancing privacy against other rights and interests. Core Policy course for MSSI degree
Sec. 01 W 10-12:20

650.632 LAW AND POLICY OF INFORMATION ASSURANCE Lavine Limit 25 This course introduces information assurance as a response to changes in technology, asymmetric threats and computer crime. It traces the concepts through civilian applications as OMB and NIST standards as well as private sector issues related to privacy, contingency response, and reliable infrastructures. It examines these concepts from a risk assessment and standards based approach central to government planning and the private sector.
Sec. 01 Online

600.642 ADVANCED TOPICS IN CRYPTOGRAPHY Ateniese Limit 20 Prereq 600.442 or 600.443 This course will focus on advanced cryptographic protocols with an emphasis on open research problems. [Applications] Cross-listed with Computer Science
Sec. 01 TTh 3-4:15

600.643 ADVANCED TOPICS IN COMPUTER SECURITY Rubin Limit 20 Prereq: Either 600.442 or 600.443 This course will focus on advanced cryptographic protocols with an emphasis on open research problems. [Applications] Cross-listed with Computer Science
Sec. 01 MW 1:30-2:45

650.652 HEALTH CARE SECURITY MANAGEMENT Lacey Limit 25 Open to MSSI students or Perm Req'd. The course will address information security in the public health and medical fields, with special emphasis on clinical care, research and the role of the academic medical center. In many respects, the course builds on 650.651 Health Information, Privacy, Law and Policy's treatment of privacy and how such privacy is protected in the health and medical arena, including but not limited to HIPAA
Sec. 01 Th 4-6:45pm

650.737 INFORMATION SECURITY PROJECTS Staff Limit 20 Open to MSSI students Perm Req'd. All MSSI programs must include a project involving a research and development oriented investigation focused on an approved topic addressing the field of information security and assurance from the perspective of relevant applications and/or theory. There must be project supervision and approval involving a JHUISI affiliated faculty member. A project can be conducted individually or within a team-structured environment comprised of MSSI students and an advisor. A successful project must result in an associated report suitable for on-line distribution. When appropriate, a project can also lead to the development of a so-called "deliverable" such as
INFORMATION SECURITY INSTITUTE

The following course is taught through the Carey School of Business and must be registered for Interdivisionally. Descriptions and times are found in the Carey School catalogue, on the JHU/ISI website, and outside of Wyman 407.

774.717 IMPLEMENTING EFFECTIVE INFORMATION SECURE PROGRAMS Kociemba Limit 25
This course focuses on the personnel, legal, regulatory, and privacy issues that constitute many of the basic management areas that must be considered in developing and implementing an effective information security program. The course also emphasizes the need for reasonable policies and procedures to ensure compliance. Core Management course for MSSI degree.

MATERIALS SCIENCE AND ENGINEERING

510.104 (E,N) INTRODUCTORY LECTURES IN BIOMATERIALS (3) Horowitz/ Mueller Limit 60
This course provides an introductory overview of the selection and use of materials in biological systems. The lectures are of an introductory nature suitable for the nonspecialist and are open to freshmen. Topics to be included are selected from the areas of design of special materials for use in biological systems, the use of materials in biological systems, and the study of the properties of natural biological materials.

510.201 (E,N) INTRODUCTION TO ENGINEERING MATERIALS (3) Spicer Limit 30
An introduction to the structure, properties, and processing of materials used in engineering applications. After beginning with the structure of materials on the atomic and microscopic scales, this course explores defects and their role in determining materials properties, the thermodynamics and kinetics of phase transformations, and ways in which structure and properties can be controlled through processing.

510.313 (E,N) MECHANICAL PROPERTIES OF MATERIALS II: KINETICS AND PHASE TRANSFORMATIONS (3) Erlebacher Limit 30
Third in the “Introduction to Materials Science” series, this course is devoted to a study of the mechanical properties of materials. Lecture topics include elasticity, anelasticity, plasticity, and fracture. The concept of dislocations and their interaction with other lattice defects is introduced.

510.314 (E,N) ELECTRONIC PROPERTIES OF MATERIALS (3) Ma Limit 30
Fourth in the “Introduction to Materials Science” series, this course is devoted to a study of the electronic, optical and magnetic properties of materials. Lecture topics include electrical and thermal conductivity, photovoltaic effects, transport phenomena, dielectric effects, magnetostrictive effects, and magnetic phenomena.

510.315 (E,N) PHYSICAL CHEMISTRY OF MATERIALS II: KINETICS AND PHASE TRANSFORMATIONS (3) Erlebacher Limit 30
Fifth in the “Introduction to Materials Science” series, this course covers diffusion and phase transformations in materials. Topics include Fick’s laws of diffusion, atomic theory of diffusion, diffusion in multicomponent systems, solidification, diffusion and diffusionless transformations, and interfacial phenomena. Same course as 510.603
MATERIALS SCIENCE AND ENGINEERING

510.400 (E,N) INTRODUCTION TO CERAMICS (3) McGuiggan Limit 25 Prereq. 510.311, 510.312 or Perm. Req’d. This course will examine the fundamental structure and property relationships in ceramic materials. Areas to be studied include the chemistry and structure of ceramics and glasses, microstructure and property relationships, ceramic phase relationships, and ceramic properties. Particular emphasis will be placed on the physical chemistry of particulate systems, characterization, and the surface and colloid chemistry of ceramics.

Sec. 01 MWF 1:30-2:15

510.407 (E,N) BIOMATERIALS II (3) Mao Prereq. 510.316. This course focuses on the interaction of biomaterials with the biological system and applications of biomaterials. Topics include host reactions to biomaterials and their evaluation, cell-biomaterials interaction, biomaterials for tissue engineering applications, biomaterials for controlled drug and gene delivery, biomaterials for cardiovascular applications, biomaterials for orthopedic applications, and biomaterials for artificial organs.

Sec. 01 MWF 10:10-10:50

510.422 (E,N) MICRO AND NANO STRUCTURED MATERIALS AND DEVICES (3) Ma Limit 30 Almost every material’s property changes with scale. We will examine ways to make micro- and nanostructured materials and discuss their mechanical, electrical, and chemical properties. Topics include the physics and chemistry of physical vapor deposition, thin film patterning, and microstructural characterization. Particular attention will be paid to current technologies including computer chips and memory, thin film sensors, diffusion barriers, protective coatings, and microelectromechanical (MEMS) devices.

Sec. 01 TTh 3-4:15

510.429 (E,N) MATERIALS SCIENCE LAB II (3) Katz Limit 25 Prereq. 510.311 or Perm. Req’d. Lab is assigned by the instructor. This laboratory concentrates on the experimental investigation of electronic properties of materials using basic measurement techniques. Topics include thermal conductivity of metal alloys, electrical conductivity of metals/metal alloys and semiconductors, electronic behavior at infrared wavelengths, magnetic behavior of materials, carrier mobility in semiconductors and the Hall effect in metals and semiconductors.

Sec. 01 T 1:30-2:45

510.430 (E,N) BIOMATERIALS LAB (3) Mao Limit 10 per section Lab Fee: $100 This laboratory course concentrates on synthesis, processing and characterization of materials for biomedical applications, and characterization of cell-materials interaction. Topics include synthesis of biodegradable polymers and degradation, electrospinning of polymer nanofibers, preparation of polymeric microspheres and drug release, preparation of plasmid DNA, polymer-mediated gene delivery, recombinant protein synthesis and purification, self-assembly of collagen fibril, surface functionalization of biomaterials, cell culture techniques, polymer substrates for cell culture, and mechanical properties of biological materials.

Sec. 01 Sec. 02 T 1:30-3:50

510.431 (E,N) BIOCOMPATIBILITY OF MATERIALS (3) Yu Limit 45 Prereq. 510.104 or 510.316, Department

Sec. 01 TTh 12-1:15
MATERIALS SCIENCE AND ENGINEERING

Majors only or perm. req’d This course provides a detailed examination of the interaction of surgical implant materials (i.e., metals, polymers, ceramics, and composites) with the body. The effect of the physiological environment on the properties of implant materials is described as well as the cellular, tissue response to the implant. Concepts dealing with the design of materials with improved biocompatibility are explored.

510.434 (E,N)  SENIOR DESIGN/RESEARCH EXPERIENCE IN MATERIALS SCIENCE & ENGINEERING II (O)  Hristova  Limit 30  Prereq: 510.311-312, 510.428-429, and 510.433 This course is the second half of a two-semester sequence required for seniors majoring or double majoring in materials science and engineering. It is intended to provide a broad exposure to many aspects of planning and conducting independent research.

510.502  RESEARCH IN MATERIALS SCIENCE

510.504  INDEPENDENT STUDY

510.603  PHASE TRANSFORMATIONS  Erlebacher  Limit 25  Prereq: 510.601 and 510.602 This course presents a unified treatment of the thermodynamics and kinetics of phase transformations from phenomenological and atomistic viewpoints. Phase transformations in condensed metal and nonmetal systems are discussed. Same course as 510.315

Sec. 01  MW 3:30-4:45

510.504  MECHANICAL PROPERTIES OF MATERIALS  Wedye  Limit 20  Prereq: 510.601 An introduction to the properties and mechanisms that control the mechanical performance of materials. Topics include mechanical testing, tensor description of stress and strain, isotropic and anisotropic elasticity, plastic behavior of crystals, dislocation theory, mechanisms of microscopic plasticity, creep, fracture, and deformation of polymers.

Sec. 01  MF 1:30-2:45

510.605  ELECTRONIC, OPTICAL, AND MAGNETIC PROPERTIES OF MATERIALS  Spicer  Limit 20  Prereq: 510.601 An overview of electrical, optical, and magnetic properties arising from the fundamental electronic and atomic structure of materials. Continuum materials properties are developed through examination of microscopic processes. Emphasis will be placed on both fundamental principles and applications in contemporary materials technologies.

Sec. 01  MWF 11-11:50

510.604

510.607  BIOMATERIALS II  Gao  Limit 20  Prereq: 510.316 This course focuses on the interaction of biomaterials with the biological system and applications of biomaterials. Topics include host reactions to biomaterials and their evaluation, cell-biomaterials interaction, biomaterials for tissue engineering applications, biomaterials for controlled drug and gene delivery, biomaterials for cardiovascular applications, biomaterials for orthopedic applications, and biomaterials for artificial organs.

Same course as 510.407

Sec. 01  MWF 9-9:50

510.612  SOLID STATE PHYSICS  Poehler  Limit 30  Prereq: 510.611 An introduction to solid state physics for advanced undergraduates and graduate students in physical science and engineering. The concepts and applications of solid state principles in modern electronic, optical, and structural materials are discussed.

Sec. 01  T 4-5:15, F 3-4:15

360.621  NANOBIO LABORATORY  Searson  Limit 30  Perm. Req’d This course introduces students to concepts and laboratory techniques in nanobiotechnology. The focus of the laboratory is on nanoparticle carriers for drug delivery and markers for imaging. The laboratory involves the synthesis of nanoparticles using solution phase techniques and characterization by optical techniques such as dynamic light scattering and absorbance spectroscopy. Strategies for functionalization of nanoparticles are covered with focus on methods for attaching biomolecules. The basic aspects of cell culture and optical microscopy techniques will be covered. Nanoparticles functionalized with a drug or gene will be used to perform transfection experiments and compared to standard techniques. Cross-listed with
Almost every material’s property changes with scale. We will examine ways to make micro- and nano-structured materials and discuss their mechanical, electrical, and chemical properties. Topics include the physics and chemistry of physical vapor deposition, thin film patterning, and microstructural characterization. Particular attention will be paid to current technologies including computer chips and memory, thin film sensors, diffusion barriers, protective coatings, and microelectromechanical (MEMS) devices.

All materials properties of materials change when encountered or fabricated with nanoscale structure. In this class, we will examine how the properties of nanostructured materials differ from their macroscopic behavior, primarily due to the presence of large interfacial areas relative to the characteristic volume scale. General topics include the structure of nanostructured materials (characterization and microscopy), thermodynamics (effects of high curvatures and surface elasticity), kinetics and phase transformations (diffusion and morphological stability), and electronic properties (quantum confinement and effects of dimensionality). Cross-listed with Chemical and Biomolecular Engineering and Interdepartmental.

MECHANICAL ENGINEERING

FRESHMAN EXPERIENCES IN MECHANICAL ENGINEERING II (2)  
Okamura  Limit 50  Prereq 530.101  
An overview of the field of mechanical engineering along with topics that will be important throughout the mechanical engineering program. This is the second half of a one-year course that includes applications of mechanics, elementary numerical analysis, programming in Matlab, use of computer data acquisition, analysis, design, and visualization; technical drawing, the design process and creativity, report preparation, teamwork, and engineering ethics.

INTRODUCTION TO MECHANICS II (2)  
Sharpe  Limit 50  Prereq 530.103  
This is the second half of a one-year course offering in-depth study of elements of mechanics, including linear statics and dynamics, rotational statics and dynamics, thermodynamics, fluids, continuum mechanics, transport, oscillations, and waves. This is an alternative to 171.101, designed specifically for Mechanical Engineering and Engineering Mechanics students taking 530.102 concurrently.

MECHANICAL ENGINEERING FRESHMAN LAB. II (1)  
Okamura  Limit 15 per section  Prereq 530.105  
Hands-on laboratory complementing 530.102 and 530.104, including experiments, mechanical dissections, and design experiences distributed throughout the year. Experiments are designed to give student background in experimental techniques as well as to reinforce physical principles. Mechanical dissections connect physical principles to practical engineering applications. Design projects allow students to synthesize working systems by combining mechanics knowledge and practical engineering skills.

MECHANICS-BASED DESIGN (4)  
Wang  Prereq 530.201  
Limit 18 per lab section  Stresses and
MECHANICAL ENGINEERING


530.241 (E) ELECTRONICS AND INSTRUMENTATION (4)  
Lec. MWF 1:30-2:20  
Lab Sec. MWF 6-8:50pm

Prereq: Physics I and II, Linear Algebra, Differential Equations  
Course: Limit 25 per lab section  
Introduction to basic analog electronics and instrumentation with emphasis on basic electronic devices and techniques relevant to mechanical engineering. Topics include basic circuit analysis, laboratory instruments, discrete components, transistors, filters, op-amps, amplifiers, differential amplifiers, power amplification, power regulators, AC and DC, power conversion, system design considerations (noise, precision, accuracy, power, efficiency), and applications to engineering instrumentation.

530.328 (E) FLUID MECHANICS II (3) Meneveau  
Sec. 01 TTh 10:30-11:45

Limit 25 per section  

530.334 (E) HEAT TRANSFER (4) Herman  
Sec. 01 MWF 11-11:50

Prereq: 530.231 and 530.327  
Introduction to basic analog electronics and instrumentation with emphasis on basic electronic devices and techniques relevant to mechanical engineering. Topics include basic circuit analysis, laboratory instruments, discrete components, transistors, filters, op-amps, amplifiers, differential amplifiers, power amplification, power regulators, AC and DC, power conversion, system design considerations (noise, precision, accuracy, power, efficiency), and applications to engineering instrumentation.

530.410 (E,N) BIOMECHANICS OF THE CELL AND ORGANISMS (3) Sun  
Sec. 01 MWF 3-3:50

Mechanical aspects of the cell are introduced using the concepts in continuum mechanics. Discussion of the role of proteins, membranes and cytoskeleton in cellular function and how to describe them using simple mathematical models.

530.420 (E) ROBOT SENSORS AND ACTUATORS (3) Whitcomb  
Sec. 01 M 1:30-2:45

Prereq: 530.241 or 530.410, 530.424, 530.425  
Introduction to modeling and use of actuators and sensors in mechatronic design. Topics include electric motors, solenoids, micro-actuators, position sensors, and proximity sensors.
MECHANICAL ENGINEERING

530.432 (E) JET AND ROCKET PROPULSION
(3) Katz  Limit 50 Prereq: 530.231 and 530.327 The course covers several topics associated with power generation and conversion. Gas turbines, such as turbo-jet, turbo-fan, and turbo-prop engines, as well as their components, are discussed. Included are the characteristics of compressors, turbines, combustion chambers, diffusers, and nozzles. A brief introduction to rocket propulsion with liquid and solid fuels is also given. The second part of the course deals with internal combustion engines, including two- and four-stroke engines as well as diesel engines.

530.476 (E) UNDERGRADUATE NUMERICAL METHODS
(3) Chen Limit 50

530.525 INDEPENDENT RESEARCH
Students pursue research problems individually or in pairs. Although the research is under the direct supervision of a faculty member, students are encouraged to pursue the research as independently as possible.

530.526 INDEPENDENT STUDY

530.602 MECHANICS OF SOLIDS

530.622 FLUID DYNAMICS II

530.635 MIXING AND COMBUSTION
Su Limit 30 Mixing of fluids, covering ideas from dynamical systems and mixing in turbulent flows. Combustion of gaseous and liquid fuels: chemistry, kinetics, deflagrations and detonations, premixed and non-premixed flames, effect of turbulence, spray and droplet combustion, combustion systems.

530.640 STATISTICAL MECHANICS AND MOLECULAR DYNAMICS
Chen Limit 30 This course introduces basic concepts of non-equilibrium statistical mechanics and molecular dynamics for engineers. Topics include Master Equation, Brownian motion, the Boltzmann equation, the hydrodynamic theory from statistical mechanics, the fluctuation and dissipation theorem, path integral, effective action, Monte Carlo methods, and molecular dynamics simulation.

530.642 PLASTICITY

530.646 INTRODUCTION TO ROBOTICS
Whitcomb Limit 40 Graduate-level introduction to robotics with emphasis on the mathematical tools for kinematics and dynamics. Topics include forward and inverse kinematics, trajectory generation, position sensing and actuation, and manipulator control.

530.676 SENSOR-BASED LOCOMOTION AND MANIPULATION
Cowan Limit 40 Introduction to the mechanics of locomotion and manipulations. In this context students will learn topics such as Lagrangian and Hamiltonian mechanics, impacts, Poincare analysis, nonholonomic mechanics, and friction.
### MECHANICAL ENGINEERING

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<tr>
<th>Course</th>
<th>Title</th>
<th>Instructor</th>
<th>Section</th>
<th>Days</th>
<th>Time</th>
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<tbody>
<tr>
<td>530.762</td>
<td>ADVANCED MATHEMATICAL METHODS FOR ENGINEERING</td>
<td>Prosperetti</td>
<td>Sec. 01</td>
<td>T 12-1:15</td>
<td>Th 9-10:15</td>
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<tr>
<td>530.767</td>
<td>COMPUTATIONAL FLUID DYNAMICS</td>
<td>Chen</td>
<td>Sec. 01</td>
<td>MW 3:15</td>
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<td>530.776</td>
<td>NUMERICAL METHODS II</td>
<td>Ensel</td>
<td>Sec. 01</td>
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<td>530.800</td>
<td>INDEPENDENT STUDY</td>
<td>Meneveau</td>
<td>Sec. 01</td>
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<td>530.802</td>
<td>GRADUATE RESEARCH</td>
<td>Meneveau</td>
<td>Sec. 01</td>
<td>Th 3-4:15</td>
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<td>530.804</td>
<td>MECHANICAL ENGINEERING SEMINAR</td>
<td>Wang</td>
<td>Sec. 01</td>
<td>T 3-4:15</td>
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<tr>
<td>530.808</td>
<td>GRADUATE SEMINAR IN FLUID MECHANICS</td>
<td>Staff</td>
<td>Sec. 01</td>
<td>F 11-11:50</td>
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### PROFESSIONAL COMMUNICATION PROGRAM

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<th>Course</th>
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<tbody>
<tr>
<td>661.110</td>
<td>TECHNICAL COMMUNICATION</td>
<td>(W) Sec. 01: Staff</td>
<td>Sec. 01</td>
<td>TTh 9-10:15</td>
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<tr>
<td>661.110</td>
<td>TECHNICAL COMMUNICATION</td>
<td>(W) Sec. 02: Staff</td>
<td>Sec. 02</td>
<td>TTh 12-1:15</td>
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<td>661.110</td>
<td>TECHNICAL COMMUNICATION</td>
<td>(W) Sec. 03: Reiser</td>
<td>Sec. 03</td>
<td>MW 1:30-2:45</td>
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<tr>
<td>661.110</td>
<td>TECHNICAL COMMUNICATION</td>
<td>(W) Sec. 04: Vohr</td>
<td>Sec. 04</td>
<td>MW 3:15</td>
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<tr>
<td>661.110</td>
<td>TECHNICAL COMMUNICATION</td>
<td>(W) Sec. 05: Rice</td>
<td>Sec. 05</td>
<td>M 6:15-9pm</td>
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</tr>
<tr>
<td>661.110</td>
<td>TECHNICAL COMMUNICATION</td>
<td>(W) Sec. 06: Vohr</td>
<td>Sec. 06</td>
<td>TTh 1:30-2:45</td>
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This highly practical course teaches students a variety of technical and business writing theories and practices. Students learn how to meet the challenges of communicating special or technical knowledge to a variety of audiences. They create several different kinds of professional documents, including resumes, application letters, object and process descriptions, instructions, reports and proposals. In addition, students work with computer-based tools to produce professional brochures, manuals and other documents. Oral communication skills are also emphasized and students work on both individual and collaborative assignments. Overall, the course emphasizes real world applications.
### PROFESSIONAL COMMUNICATION PROGRAM

Students are exposed to the latest research on language and the writing process and develop communication skills which will be immediately valuable to them in their other courses, as well as in future careers.

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<th>Course Code</th>
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<tbody>
<tr>
<td>661.120</td>
<td>BUSINESS COMMUNICATION (3)</td>
<td>Sec 01</td>
<td>T 6:15-9pm</td>
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<tr>
<td>(W)</td>
<td>Sec. 01: Sandhaus</td>
<td>02</td>
<td>W 3:30-5:30pm</td>
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<td></td>
<td>Sec. 02: Porosky</td>
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<td>Sec. 03: Rice</td>
<td>03</td>
<td>TTh 10:30-11:45pm</td>
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</table>

Business Communication provides students with practice in preparing business-style documents. Students focus on developing clear and concise prose by writing business memos and letters, resumes and cover letters, business proposals, and formal reports. Students are expected to present their work orally using business and professional formats, as well as to enhance their presentations with appropriate technology-based media.

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>661.150</td>
<td>ORAL PRESENTATIONS (3)</td>
<td>Sec 01</td>
<td>M 3:00pm</td>
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<tr>
<td>(W)</td>
<td>Sec. 01: Dungey</td>
<td>02</td>
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<td>Sec. 02: Dungey</td>
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<td>Sec. 03: Reiser</td>
<td>03</td>
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<td>Sec. 04: Porosky</td>
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<td>Sec. 05: Porosky</td>
<td>05</td>
<td>W 6:15-9:00pm</td>
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This course will introduce students to the principles of developing and delivering effective oral presentations, including getting to the point and staying there; developing clear and audible structure; engaging (and gauging) your audience; using effective delivery techniques; choosing and designing visual aids; and giving presentations using technology. Students will practice these skills in a variety of contexts, from short impromptu talks to long technical presentations meant for lay audiences. They will create and deliver effective oral presentations and submit written documents (speaking scripts) to accompany them.

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<tr>
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<tbody>
<tr>
<td>661.390</td>
<td>ADVANCED PROFESSIONAL COMMUNICATION WORKSHOP: CREATING JAY STREET: THE JOHNS HOPKINS JOURNAL OF ENTREPRENEURSHIP AND TECHNOLOGY</td>
<td>Sec 01</td>
<td>MW 1:30-2:45pm</td>
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</table>

This interactive workshop course, open to students from all academic disciplines, will create a prototype for a new JHU publication, modeled on the Harvard Business Review, focusing on case studies of businesses created by Johns Hopkins students and alumni. Students will identify and develop case analyses to communicate key business and technological strategies/challenges, honing their research, writing, editing, design and presentation skills. The class will design and publish Jay Street, in print and online, providing students a key credential for the future.

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<tbody>
<tr>
<td>661.610</td>
<td>RESEARCH WRITING</td>
<td>Sec 01</td>
<td>W 3:30-5:00pm</td>
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</table>

This course is designed to provide writing and organizational support to graduate students developing journal articles, dissertations, theses, or conference papers. Oral presentation skills are also addressed, as are issues for those speaking English as a second language.